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JOURNAL OF THE AMERICAN DIETETIC ASSOCIATION

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olume 16 • MARCH 1940 • Number 3

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Next Annual Meeting, New York City, October 20-24, 1940

Published by

THE AMERICAN DIETETIC ASSOCIATION

Business Office: MOUNT ROYAL AND GUILFORD AVENUES, BALTIMORE, MARYLAND
Advertising Office: 185 N. WABASH AVENUE, CHICAGO, ILLINOIS

METHODS FOR QUANTITATIVE ESTIMATION OF THE VITAMINS

VI. Measurement of the P-P Factor (Nicotinic Acid)

● Early investigations by the U. S. Public Health Service demonstrated that pellagra may be prevented or cured by dietary regulation. Human subjects confined to an institutional diet known to produce pellagra, were completely protected from this disease by proper supplementation of the institutional diet (1). Ultimately, the existence of the P-P or Pellagra-Preventive factor was established (2).

From the similarity in natural distribution of the dietary factors effective in the control of human pellagra and canine blacktongue—as well as the pathology of these two diseases—the working hypothesis that canine blacktongue is the analogue of human pellagra was adopted (2). Techniques (2, 3) were devised for estimating the pellagra-preventive value of foods by feeding tests with dogs and the results checked by clinical observations with human subjects. The ability of a food to supplement basal diets—known to produce canine blacktongue or human pellagra—so as to prevent or delay the development of characteristic symptoms were the criteria employed for judging the P-P values of foods. Such tests using dogs or human subjects are still the most reliable methods for measuring the P-P potencies of foods (4, 5).

Although pellagra-producing diets may frequently be deficient in a number of essential nutrients (4, 6), the value of nicotinic acid or nicotinic acid amide for the treatment of the specific symptoms of blacktongue or pellagra is well established (7, 8). Recognition of the importance of nicotinic acid in human nutrition created a definite need for rapid methods of estimating the nicotinic acid content of foods. The possibilities of the reaction between nicotinic acid, cyanogen bromide and aromatic amines as a basis of a colorimetric method for estimating nicotinic acid are receiving consideration (9). However, cyanogen bromide and aromatic amines may react with a number of compounds containing the pyridine ring to produce a yellowish green color. Therefore, it is essential that the specificity of any method for nicotinic acid be clearly established before nicotinic acid values determined by the method can be accepted as indicative of the pellagra-preventive values of foods.

Permanent control of endemic pellagra will require inclusion of a larger number of the protective foods in the pellagrin's diet (4, 6). General improvement of diets by this means will serve to correct not only deficiencies of the P-P factor, but of other essential factors, as well. The value of commercially canned foods in a program designed to correct pellagra—as well as its attendant or secondary dietary deficiencies—might well be emphasized.

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JOURNAL OF THE
AMERICAN DIETETIC ASSOCIATION

VOLUME 16 March, 1940 NUMBER 3

THE ELIMINATION DIETS IN THE DIAGNOSIS AND TREATMENT OF FOOD ALLERGY[1]

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THE elimination diets (1) for the diagnosis of possible food allergy were first described by the writer in 1928. Since the first demonstration of skin reactions to allergic foods by Smith in 1909 and by Schloss in 1912, the fallibility of the skin test as a dependable indicator of food allergy has been noted by an increasing number of students, and various types of trial diet have been suggested. The writer's conviction of such frequency of negative skin reactions to allergic foods and of false positive reactions, especially with intradermal tests, gradually led to the formulation of the elimination diets that exclude most foods which frequently cause clinical allergy. Since such trial diagnostic diets must usually be used for two or more weeks before definite relief is possible, it is necessary to include enough foods in the diets so that fairly satisfactory and regular meals can be prepared and nutritional requirements as well as weight maintenance can be assured.

[1] Read before the General Session, American Dietetic Association, Los Angeles, August 28, 1939.

Gradually fewer physicians have depended entirely on skin tests for the determination of possible food allergies. With test negative diets some patients are relieved of symptoms due to food allergy, but too frequently no relief occurs and food allergy unjustifiably is ruled out in the etiology. Positive reactions are obtained by the scratch reaction to allergenic foods especially when those foods produce immediate or severe manifestations. However, patients may give a few reactions to foods that cause allergy and frequently fail to react to other allergenic foods. With the intradermal tests, more reactions are obtained than with the scratch test, but here false reactions or reactions to foods not productive of clinical symptoms often occur. In chronic food allergy where delayed or cumulative reactions occur, skin reactions by both methods are often negative. Positive reactions to foods, moreover, must be checked by diet trial to determine their true rôle. Test negative diets often exclude so many foods that malnutrition may occur unless careful attention is given to the arranging of menus, vita-

min and mineral therapy, so that no nutritional damage will arise. Because of the above facts and pitfalls, the writer uses test negative diets only when reactions check definitely with the patient's history, and the majority of patients are studied with elimination diets modified, if indicated, by history and skin reactions as later described.

A careful diet history should be routine with every patient since aversions or distastes for allergenic foods may occur, or actual known disagreements may be present. Such history is not always indicative of food allergy, but it should lay suspicion on the food. Many patients may blame foods incorrectly; indigestion due to causes other than allergy may be attributed to various foods; nervous indigestion associated with unwarranted and fixed ideas about food disagreements may occur. The fact remains, however, that a careful interrogation as to dislikes for foods, foods that are never eaten such as milk, eggs, vegetables, or fruits, and other specific questions often yield valuable information in the diagnostic study.

Thus, patients suspected of food allergy are most adequately studied by elimination diets or some modification thereof. If definite skin reactions or probable idiosyncrasies or aversions for foods in the diet exist, the foods in question should be excluded and other similar foods not suspected of possible allergy in the patient should be substituted.

To better appreciate the necessary care with which elimination diets must be prepared and the need for absolute cooperation of the patient, a few of the important characteristics of food allergy must be constantly in mind. After the ingestion of an allergenic food, symptoms may arise within a few minutes, in an hour or two, or occasionally in 1 to 4 or 5 days. Frequently ingestion for several days is required. Tolerance or desensitization may develop after a food has been eliminated for a few weeks or months. At times, however, such increased tolerance never develops. Allergy to a food varies with each patient. Some are so sensitive that a 1/1000 drop of egg will produce severe symptoms. Others will tolerate a small amount but not larger or repeated amounts. Until the patient is symptom-free it is necessary to assume that the highest degree of sensitization exists to any allergenic foods. This, of course, requires the most fastidious preparation of the menus so that no trace of an unordered food is included, and it demands absolute cooperation and honesty on the patient's part.

One food may produce bronchial asthma, another eczema, still another gastro-intestinal symptoms. The site of the shock tissues, therefore, may vary for different foods. Of interest is the fact that food allergy is definitely lessened in many patients during the summer months, increasing in degree from September to April. Food allergy also is benefited by inland and dry areas, explaining why certain patients can take foods in the interior of California and not near the coast. Desensitization with antigens containing allergenic foods has been disappointing to most allergists, though some evidence points to better results with more frequent and smaller doses. It has been maintained, especially by Ratner (2), that foods denatured by heat, including evaporated canned, superheated milk, cereals, and bread such as Melba toast are tolerated by patients allergic to

such foods. However, this does not seem to hold with patients with more than mild allergies thereto, and it is the writer's opinion that such denatured foods should not be tried until the patient has become definitely symptom-free on the elimination diets. It is of interest from the viewpoint of nutrition that Morgan (3) has found that superheated proteins lose about 10–50 per cent of their nutritional value, according to the time and the amount of heat used. The main dependence must rest on long elimination of causative foods, placing a premium on good cooperation and self-denial. Finally, it is most important to remember that food allergy is frequently associated with various types of inhalant and at times with bacterial allergy. The physician's responsibility is to keep this fact in mind and remember all the possible causes of allergy, some of which may not become evident until observation and treatment of the patient has continued for some weeks or months.

The elimination diets (1) as now used were revised in 1934. Diets 1 and 2 contain: rice, corn, and tapioca for starches; lamb, beef, bacon, and chicken (no hens) for protein; selected vegetables and fruits; and sugar, specified oils, salt, maple syrup, and gelatin. At present I am substituting sesame oil, olive, or Mazola for cottonseed oil because of the frequency of cottonseed allergy. Diet 3 contains tapioca, sweet and white potato for the starches, and specified meats, vegetables, and fruits, with the other miscellaneous foods in Diets 1, 2, and 3. Diet 4 consists of milk alone for a trial period of 10–20 days. It can be combined with sugar and also tapioca, allergy to which is extremely rare. To prepare satisfactory meals from such lists of foods, it is absolutely necessary to provide the patient with detailed menus so that meals comparable to those ordinarily taken are possible and so that the necessary period of diet trial will not be too monotonous. Recipes for breads, cakes, cookies, and candies made of prescribed flours and other ingredients have been published. Menus for such meals also are published and can be modified if necessary changes in foods are made. They include enough protein, minerals, vitamins, and calories for nutritional requirements except for calcium and vitamin D. Extra calcium should be prescribed as long as adequate amounts of milk are out of the diet. Various forms of calcium are satisfactory since all are changed into carbonate in the bowel. If calcium gluconate is used, 1 to 2 teaspoons mixed in a half glass of hot water or weak tea taken on an empty stomach, lends to solubility and assimilation.

Physicians and dietitians must be certain that patients on elimination diets are obtaining approximately the amounts of vitamins A, B_1, C, and D which are generally considered necessary for adequate nutrition. At present, the whole subject of vitamins is in such a state of progress and change that opinions of today will have to be modified by knowledge of tomorrow. Yet we must take advantage of the important information now available. An approximate estimate of the daily vitamin intake for health may be as follows:

	VITAMIN A (U.S.P. UNITS)	VITAMIN B_1 (INT. UNITS)	VITAMIN C (INT. UNITS)	VITAMIN D (U.S.P. UNITS)
Infants	4000–6000	100–150	200–300	700–1000
Children	6000–10,000	150–300	400–700	700–1000
Adults	6000–8000	300–600	400–600	700–1000
Pregnancy and Lactation	8000–10,000	500–600	800–1200	800–1000

The approximate amounts of these vitamins in the diet can be determined by referring to the table on page 134 of Bulletin 275 *Vitamin Content of Foods* published by the Department of Agriculture. So-called International units for vitamins A and B_1 are about two times as large as the Sherman units in which they are recorded in this table. A Sherman unit for vitamin C also equals about 10 International units. Moreover, in a few years as all these analyses are experimentally checked and the vitamins synthesized, their amounts will be expressed in milligrams or micrograms of the chemically pure vitamin substance rather than in biologically determined units. At present, for practical purposes, the vitamin content of the diet is best determined in units given in such a table as published in this bulletin. It must be remembered also that such determinations were made on raw foods and that cooking reduces the water-soluble vitamins B and C by about 30–50 per cent. Careful cooking and use of the water in which the vegetables are cooked conserve the vitamin content. If with such study of the diet, it becomes evident that the intake of any vitamin is low, more of the foods containing such vitamin can be given, or additional A, B, or C vitamins can be prescribed. The problem of adequate vitamin D has already been discussed. The so-called B complex, containing riboflavin, nicotinic acid, the anti-dermatitis factor, the anti-grey hair filtrate factor (4), and other vitamins not definitely demonstrated as yet are, of course, of great importance for adequate nutrition. Remembering that yeast, rice, bran, and especially liver are rich in these, their inclusion in the diet can be increased. The administration of synthesized riboflavin, nicotinic acid, and the anti-dermatitis factor B_6, is also producing favorable results, especially in pellagrins and other patients with symptoms due to long-standing deficiencies in such vitamins. Vitamin determinations and therapy, therefore, are most important, but we must remember that the requirements and the recommended doses are still only approximate, though of unquestioned value in the prescribing of diets and vitamins for patients.

While the patient is being studied with elimination diets to determine the possibility of food sensitizations, the physician must interview or hear from the patient at frequent intervals. He must be certain that there is absolute adherence to the diet. The foods must be cooked and served in clean utensils and dishes. Spoons and knives which have touched foods not on the diet must be thoroughly washed before use in the patient's food. Canned soups and other prepared foods, every ingredient of which is not known, are forbidden. This, of course, does not exclude the plain canned vegetables and fruits allowed. Bread and bakery products must be made at home with such recipes as published with the elimination diets, or must be prepared by a baker who prepares them from such recipes with flour of known purity and whose honesty is unquestioned (5). Soy, Lima bean, potato, rye, or rice breads, cookies, or cakes as sold in unsupervised health food, grocery, or chain stores, are dangerous since they practically always contain varying amounts of wheat, gluten, milk, or egg, even though the salesman has an opposite opinion. While dieting continues,

the known or unintentional taking of even a trace of any food, condiment, beverage, or candy not ordered should be determined by the physician in frequent interviews.

Above all else, with continued diet trial, the physician must be certain that undesirable weight loss and especially nutritional damage do not occur. If weight tends to decrease, the patient should take a tablespoon of a specified oil on salads and vegetables and after each meal and even in smaller amounts at intervals through the day. Additional sugar, maple, or other permitted syrups, plenty of potato, candied sweet potato, more bread and bakery products, and other calorie-carrying foods will aid in increasing calories.

Of great importance is the preparation and cooking of the meals in such a manner that they will satisfy and appeal to the patient's taste. Dietitians, especially, must keep this in mind and send meals to patients prepared with their best ingenuity and skill. Recipes for special dishes should be improvised, and the meats, vegetables, fruits and desserts should be prepared in different ways so that monotony, if possible, will be avoided. With the several meats, vegetables, potato, and other foods, soups of different types served hot should be given. Candies as suggested in published recipes or with gelatin incorporated, or candied frostings on cakes made according to recipes, add interest and variety to meals. These suggestions are only a few of those which are obvious helps in making elimination diets more palatable.

In ordering the elimination diet, the physician may first use diets 1 and 2 combined, containing corn, rice, and rye, for which menus are available. At times sensitization to cereals: namely, wheat, rice, corn, rye, barley, and oats as a group may exist. An allergen common to all as well as allergens specific for each grain are present. Then elimination diet 3 which contains no cereals and depends mainly on tapioca and white and sweet potato for its starches may be used. To make this diet more generous, the meats, vegetables, and fruits in diets 1 and 2 may be used, and in ordering the diet, the physician thus writes, "cereal-free elimination diets 1, 2 and 3."

As already stated, in the initial ordering of the diet, foods giving definite positive reactions or suspected of possible allergy through the patient's history may be excluded from the chosen elimination diets and other foods not suspected of allergy may be added. Thus the physician can order his diet as follows: Elimination diets 1 and 2 plus sweet potato, egg plant, chard, and avocado, minus rice, apricot, and lemon; or Elimination diet 3 plus lamb, carrots, squash, and tea, minus white potato and beef; or the order may be for diets 1, 2, and 3 unchanged. Such simple written orders are time-saving for the physician and indicate a definite list of foods from which standardized and generally used menus are available.

If the first diet ordered does not relieve the patient in two or possibly three weeks, then another of the routine diets should be tried, remembering the while that adequate nutrition and weight must be maintained. If weight falls undesirably and nutrition is not maintained, elimination diets should be stopped since uncontrolled food allergy would be preferable.

If the routine diets are not productive of relief, before ruling out the possibility of food allergy as a cause, consideration should be given to the occurrence of group sensitizations to all or most meats, fruits, vegetables, or other foods. For such possibilities, my supplemental diets have been published. Thus elimination diets free of these various groups of foods one or two at a time can be given if symptomatology indicates that such limited diets are justified. Here special attention must be paid to supplemental vitamin therapy and protein and calorie maintenance. With the availability of vitamins A and especially B and C in recent years, a fruit and vegetable-free diet including meat or milk for protein, and potato with or without tapioca, plenty of a specified oil, sugar, maple syrup, and salt with additional calcium and vitamin D, if necessary, is justifiable for trial dieting. A more extended discussion concerning these supplemental trial diets for the occasional patient suspected of a great number and variety of food allergies is published elsewhere (1).

In conclusion, I would stress the importance of trial diet in the diagnosis of food allergy. The realization that food allergy may affect any tissue in the body, being a common cause of nasal and sinusal allergy, bronchial asthma and allergic bronchitis, migraine and recurrent headaches, gastro-intestinal symptomatology beginning with canker sores and other oral lesions, including gastric and intestinal disturbances and mucous colitis, constipation, and pruritus ani, urticaria, angioneurotic edema, and atopic dermatitis (eczema), and less frequent urogenital and ocular manifestations, is becoming more appreciated by the medical profession.

Thus the dietitian will be asked with increasing frequency to prepare diets which exclude allergenic foods and to arrange menus for various trial diets during the diagnostic study of the patient. For such trial diet, the use of elimination diets constitutes a standardized and logical method which has been generally used in the last decade. With a more definite understanding of the principles involved in the ordering of such elimination diets and of the requisite care and skill with which such diets must be prepared as described above, dietitians will do much to meet the challenge which food allergy presents to the medical profession.

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EFFECT OF CHANGES IN FOOD INTAKES UPON THE LIGNIN, CELLULOSE, AND HEMICELLULOSE CONTENTS OF DIETS[1]

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THERE is a growing appreciation of the importance of fibrous foodstuffs in the diet although their exact physical and physiological activities within the human body are not fully understood. Lack of accurate methods for separation and study of the complex carbohydrates has retarded accumulation of scientific knowledge of their dietary properties. Indeed, this advance has been so slow that today there is a dearth of reliable information upon even the contents of cellulose, hemicellulose and lignin in common American foodstuffs. This fact precludes dietary alterations which consider the precise proportions of important complex carbohydrates, yet there has been dietetic recognition of the beneficial physiologic value of cellulose (1–4) and the other component parts of the "crude fiber" (5–13) in satisfactory nutrition and elimination. It is obvious from metabolic studies on children that these little understood complex carbohydrates may affect not only nitrogen retentions but also acid-base mineral balances (14).

Mangold (8) has defined crude fiber as "the sum of all those organic components of the plant cell membrane and supporting structures which in chemical analysis of plant foodstuffs remain after removal of crude protein, crude fat and nitrogen-free extractives." It is composed of a mixture of chemical substances, cellulose, hemicellulose (pentosans, hexosans) and encrusting substances (lignin, cutin, suberin, pectin). Knowledge of the chemical, physical, and structural properties of these substances is most incomplete and because no enzymes capable of digesting cellulose and its associated polysaccharides have been found in man's digestive tract, these substances are sometimes spoken of as "unavailable carbohydrates" (12). In man the digestibility or disappearance of fiber is extremely variable and depends in part upon its content of cellulose and pentosans (apparently lignin is not digested at all) and the presence of bacteria in the alimentary canal. The young, non-lignified cell membrane of plant foods is much more easily broken down by bacteria than older, lignified structures; consequently, the disappearance of indigestible carbohydrates in the digestive tract varies inversely with the lignin content of the food intake.

This report presents the analyses of fourteen common foods for cellulose, hemicellulose and lignin and the effect of minor dietetic manipulations upon the proportional composition of the total diets of nine children, 5 to 8 years of age. Of the nine children, four (B. M., J. M., B. F., and P. W.) of the subjects are girls. The importance of considering the

[1] Received for publication December 11, 1938. The expenses of this study were defrayed in part by a grant from the United Fruit Company, Boston.

changes in the proportions of the various food elements as the result of even slight alterations in diet is emphasized by the variations in nitrogen retentions produced by the addition or substitution of 100 gm. of banana fed at a similar stage of ripeness[2], in mixed diets composed of 20 different foods[3]. The diets of the children were comparable qualitatively but quantities were varied according to the demands of the individual's physiologic needs, age, size, and activity.

The vitamin content of the diets, calculated according to the food type group values presented by Munsell (15), ranged from 4800 to 5000 I.U. vitamin A per day, 280 to 325 I.U. vitamin B_1, 1300 to 2000 I.U. (65 to 100 mg. ascorbic acid) vitamin C, and 600 to 630 I.U. vitamin G per day. The daily amounts suggested by Munsell as probably adequate for an adult are: 3000 to 5000 I.U. vitamin A, 300 to 400 I.U. vitamin B_1, 800 to 1200 I.U. (40 to 60 mg. ascorbic acid) vitamin C, 600 Bourquin-Sherman units vitamin G. Other physiologic effects of these diet alterations upon the metabolism of the normal subjects during consecutive pre-experimental and experimental periods of 20 to 50 days have been discussed (14, 16, 17).

Preceding papers have detailed the rigid selection of the subjects[4], the maintenance of normal environment and activity during the study, and the metabolic régime (18). Each child served as his own control because the wide variation in the response of different subjects seems attributable to individual differences in intestinal flora and the environmental conditions of the bacteria in the intestine (8) as well as the physiologic factors such as inherent gastro-intestinal motility characteristic for the individual (19).

[2] The bananas were selected by Mr. R. E. Reiff of the Fruit Dispatch Company, Detroit.

[3] The diet was composed of the following foods which were fed in sufficient quantities to take care of body requirements for growth and activity: apple, banana, lean beef, white and whole wheat bread, butter, cabbage, carrots, cheese, eggs, Graham crackers, spinach, lettuce, milk, peanut butter, potato, shredded wheat or corn flakes, tomato and orange juice, sugar and salt.

[4] Marsh W. Poole, M.D., made the physical and medical examinations of the children.

EXPERIMENTAL RESULTS

It is recognized that foods from different sources may vary greatly in composition (20) and the scarcity of determinations of the complex polysaccharides of foods has been stressed (7). For this reason the lignin, cellulose, and hemicellulose contents of foods used in this study may serve as a useful reference and stimulate other investigators to explore more thoroughly the dietetic and physiologic effect of fibrous foods upon metabolism.

Analyses of Foods.[5] Fresh foods were purchased on the open market, and in order to minimize the effect of variation in the foods (20), two samples of each vegetable, six of apple, and four of banana were obtained from different sources, over a period of several months. Those vegetables which are commonly served cooked or uncooked were prepared in both ways. Samples of cabbage, potato and carrot were cooked in a small quantity of distilled water, and the water evaporated so that all of the essen-

[5] Energy was determined with the Parr Oxygen Bomb Calorimeter; nitrogen was determined by the boric acid modification of the Kjeldahl method. Detailed methods will be included in a monograph in preparation on *Chemistry and Nutrition of Growth in Childhood.*

tial food constituents would be retained. Representative samples of the fresh foods and the cooked vegetables were dried to constant weight in vacuo at 40°C. They were ground to pass through a 20-mesh sieve, and those foods which contained significant amounts of fat were extracted with ether in a Soxhlet apparatus for ten hours.

The method of Williams and Olmsted (5) for determining lignin, cellulose and hemicellulose was followed for the analyses because it gave reproducible results in our hands. Although the method for cellulose and hemicellulose is admittedly an approximation, since both polysaccharides give hexosans and pentosans upon hydrolysis (21), it is perhaps the best method available at the present time for routine determination. The classic Weende method, which has been used extensively for "crude fiber" estimation, has been shown by several investigators to be inadequate, giving variable values for the composition. Unfortunately, most of the values for crude fibers in foods in the literature at the present time have been obtained by this method. The only reliable values for unavailable carbohydrates ("roughage") which can be used for reference are those of McCance and his co-workers (13) upon foods in Great Britain. Their data, obtained by difference from the determinable constituents, are considered the most accurate values available for the total fiber content of common foods.

Triplicate samples of each material to be analyzed were autoclaved for 30 minutes, and digested with pancreatin and buffer-bile salt solution for three days. The enzymatic hydrolysis was carried out in an incubator for three days at 38.5°C. but repeated tests showed that this change in the procedure did not appreciably affect the results. After three days the samples were filtered through silk and washed thoroughly to remove the soluble hydrolyzed products, resins, gums and remaining fat. The dried residues were treated with 60 per cent sulfuric acid for 24 hours at 6°C. to dissolve the cellulose and hemicellulose, dissociating them from the lignin. The samples were then diluted with 4 per cent sulfuric acid and refluxed to hydrolyze the polysaccharides to simple sugars. The lignin was then filtered off and weighed as loss on ignition.

The fermentable and non-fermentable sugars were determined on aliquots of the filtrate by the Schaffer-Somogyi (22) method. Fermentable sugar was calculated as cellulose, and non-fermentable sugar as hemicellulose. All samples were carried through the procedure a second time, without the enzymatic hydrolysis, to permit determination of the "labile hemicellulose", the portion soluble at *p*H 8 (5). Since no significant change in the carbohydrate distribution was found after cooking, all the vegetable analyses were averaged and the distribution of the unavailable carbohydrates in the 14 foods is presented in table 1. It is possible that if the cooking water had been discarded a slight loss of labile hemicellulose would have resulted.

The vegetables showed a definite similarity in residue composition, especially in their proportion of cellulose, which ranged from 51 to 62 per cent. Corn flakes fell within the typical distribution of the vegetables, in contrast to the shredded wheat and bread, which contained a larger proportion of hemicellulose, from 59 to 60 per cent. Apple residue is similar in composition to the

vegetables; banana contains a larger proportion of lignin, 60 per cent. From 30 to 50 per cent of the hemicellulose of the vegetables studied is labile, and about 15 per cent of that in the above fruits. Wheat bran apparently undergoes some change in content or distribution of the hemicellulose during the various processes to which it is subjected. All but 3 per cent of the hemicellulose of shredded wheat is stable, and all of the hemicellulose in Graham crackers. White and whole wheat breads are 54 and 72 per cent stable hemicellulose, respectively.

TABLE 1

The Unavailable Carbohydrate Content and Distribution in 14 Common Foods

	RESIDUE§ PER 100 GM. WET FOOD				PERCENTAGE COMPOSITION OF TOTAL RESIDUE§			HEMICELLULOSE	
	Total	Lignin	Cellulose	Hemicellulose	Lignin	Cellulose	Hemicellulose	Per cent Stable	Per cent Labile
	gm.	gm.	gm.	gm.					
Apple*	0.82	0.22	0.42	0.18	27	51	22	86	14
Banana, ripe**	0.83	0.50	0.21	0.12	60	25	15	85	15
Bread, white	0.84	0.07	0.27	0.50	8	32	60	54	46
Bread, whole wheat	2.86	0.47	0.67	1.72	16	24	60	62	28
Cabbage‡	1.01	0.11	0.53	0.37	10	53	37	70	30
Carrot‡	1.09	0.11	0.61	0.37	10	56	34	50	50
Corn flakes	1.40	0.21	0.76	0.43	15	54	31	0	100
Graham crackers	2.16	0.86	0.53	0.77	40	24	36	100	0
Lettuce†	0.64	0.08	0.35	0.21	12	55	33	56	44
Peanut butter†	1.34	0.21	0.60	0.53	16	45	39	74	26
Potato‡	0.54	0.06	0.34	0.14	11	62	27	69	31
Shredded wheat	5.92	0.80	1.65	3.47	13	28	59	97	3
Tomato juice†	0.15	0.01	0.11	0.03	7	75	18	0	100
Spinach†	0.56	0.13	0.29	0.14	23	51	26	69	31

* Data given are averages for six samples.

** Data given are averages for four samples.

† Data given are averages for two samples.

‡ Data given are averages for two raw samples and two cooked samples.

§ Total fiber.

Effect of Diet Changes upon Unavailable Carbohydrate Intake. The alterations made in the daily diets of the subjects during the experimental periods are shown in table 2. The effect upon the unavailable carbohydrate intake of adjusting the quantities of banana and cereal is shown in table 3. From the figures it is apparent that addition, or substitution for cereal, of 100 gm. banana altered the proportion of carbohydrate in the diet considerably. It is important to note that seven of the subjects received 100 gm. apple throughout the study and the other two received 200 gm.; also, that the same seven children were receiving 100 gm. banana during the pre-experimental period, the other two none. Three of the children received a diet increased by 100 gm. banana during the experimental period (Group I). Five of the children received 100 gm. banana instead of 30 gm. cereal

(Groups II and III). One child (Group IV) received a diet increase of 100 gm. banana and other foods.

Banana has been proved a valuable food by feeding experiments but its complicated influences upon nutritional processes and unusual chemical structure emphasize the value of investigation of the effects of altered carbohydrate distribution in food intake, produced by addition or substitution of banana in the diet. Since apple and banana, although varying in chemical structure, have similar nutritive characteristics (9–11) which seem to reside in the carbohydrate moiety, it is of significance to observe the changes in distribution and effect of the carbohydrate intakes when the proportions of apple and banana vary in the diets. The additional banana added some pectin (about one per cent of the fresh pulp) which seems to have unique physiologic value in stimulating more wholesome utilization and passage of intestinal contents (9–11), a more satisfactory buffer action (10, 11, 23), and a change in the bacterial flora of the feces (24). The tannin content of banana may also be of some significance (25).

TABLE 2

Diet Alterations

	CONTENT OF DIET DURING PRE-EXPERIMENTAL PERIOD		CHANGES IN DIET DURING EXPERIMENTAL PERIOD			
			Addition		Deletion	
	Apple	Banana	Food	Gm.	Food	Gm.
	gm.	*gm.*				
Group I:						
H. H., F. C., D. P.	100	100	Banana	100	None	
Group II:						
R. S., B. M., J. H.	100	100	Banana	100	White bread	10
					Cereal*	20
Group III:						
J. M., B. F.	200	None	Banana	100	White bread	10
					Cereal*	20
Group IV:						
P. W.	100	100	Banana	100	None	
			Potato	30		
			Butter	10		
			White bread	50		

* Shredded wheat or corn flakes.

The three children whose diets were increased with 100 gm. banana per day during the experimental period had been receiving, daily, an average of 266 mg. of total fiber per kilogram of body weight during the pre-experimental period. The additional banana raised this average to 300 mg. per kilogram. These are higher intakes of fiber than the physio-

logic roughage minimum of 90 to 100 mg. per kilogram of body weight per day considered necessary for a satisfactory laxation rate in adult man by Cowgill and Anderson (1). The additional banana increased the subjects' intake of lignin from 1.33 to 1.79 gm. per day; of cellulose, from 2.32 to 2.56 gm. per day; and

TABLE 3

Influence of Addition or Substitution of 100 Grams of Banana in the Daily Diets of Children. Nitrogen Intakes and Retentions and Carbohydrate Intakes per Kilogram of Body Weight per Day

	OBSERVATION PERIOD	INITIAL AGE	RECUMBENT LENGTH AVERAGE	WEIGHT AVERAGE	ENERGY INTAKE	NITROGEN		UNAVAILABLE CARBOHYDRATE INTAKE			
						Intake	Retention	Total residue*	Lignin	Cellulose	Hemicellulose
	days	*mo./days*	*cm.*	*kg.*	*cal./kg.*	*mg./kg.*	*mg./kg.*	*mg./kg.*	*mg./kg.*	*mg./kg.*	*mg./kg.*
Group I:											
H. H. Pre-experimental	35	84/24	119.8	20.76	90	497	4	295	64.0	111.8	119.0
Experimental	40	85/28	120.2	21.33	93	489	20	327	83.9	120.0	122.8
F. C. Pre-experimental	35	79/5	119.4	21.60	87	478	4	281	61.2	107.1	113.1
Experimental	40	80/9	120.1	22.40	88	466	18	311	79.9	114.3	117.0
D. P. Pre-experimental	35	98/20	136.0	27.68	69	373	2	221	48.0	83.8	89.2
Experimental	30	99/24	137.1	27.60	72	378	2	251	64.7	92.3	93.8
Group II:											
R. S. Pre-experimental	30	65/17	114.0	18.26	90	517	43	303	70.1	113.8	118.8
Experimental	20	66/21	114.7	18.40	89	503	19	297	88.0	110.4	98.9
B. M. Pre-experimental	30	63/7	104.1	16.23	100	582	27	341	78.8	128.2	133.7
Experimental	30	64/6	105.3	16.88	96	549	26	324	95.9	120.3	107.2
J. H. Pre-experimental	30	55/22	106.9	16.84	97	561	13	328	76.0	123.5	128.8
Experimental	30	56/21	107.4	16.87	97	549	10	324	95.9	120.4	107.3
Group III:											
J. M. Pre-experimental	40	75/3	116.4	20.64	85	498	24	297	51.8	123.5	121.6
Experimental	45	76/17	117.4	21.58	82	464	29	281	65.3	115.8	99.8
B. F. Pre-experimental	40	69/12	110.5	18.43	95	558	20	332	58.0	138.3	136.2
Experimental	50	70/12	111.4	19.28	91	520	36	314	73.1	129.6	111.7
Group IV:											
P. W. Pre-experimental	55	75/29	116.8	20.21	80	468	−6	274	63.3	103.0	107.4
Experimental	25	78/3	118.2	21.15	93	495	38	331	85.0	121.6	124.4
Pre-experimental period of	330	Means	116.3	20.20	87	500	13	293	62.7	114.2	117.9
Experimental period of	310	Means	116.8	20.71	89	490	23	306	79.8	117.1	109.7

* Total fiber.

of hemicellulose, from 2.47 to 2.62 gm. per day. Per kilogram of body weight, the average daily increases in lignin, cellulose and hemicellulose intakes were similar for the three children. One child (D. P.) showed a slight decrease in his average daily weight during the experimental period although the subject maintained the same rate of nitrogen retention per kilogram of body weight during the period of additional banana intake even though he was older during this period and his average weight less. The two children (H. H. and F. C.) whose average weight was greater during the experimental period were receiving smaller average intakes of nitrogen per kilogram per day, yet their nitrogen retentions per kilogram per day were increased from 4 mg. each to 20 and 18 mg., respectively.

Of the five children who received the 100 gm. banana per day in place of 30 gm. cereal during the experimental period, three (Group II) were receiving 100 gm. apple and 100 gm. banana in their mixed diet during the pre-experimental periods (the substitution increased the banana content during the experimental period to 200 gm. daily); the other two children were receiving 200 gm. apple and no banana.

Apple contains less lignin but more cellulose and hemicellulose than banana, though the total fibrous residue is approximately the same (table 1). During both periods each of the five subjects received the same total amounts of the two fruits, 200 gm. during the pre-experimental period, 300 gm. during the experimental period. The diets during the experimental period provided each child, per kilogram of body weight per day, with a smaller intake of total fiber, but intakes of lignin were increased and cellulose and hemicellulose decreased by the banana substitution for cereal. Although the nitrogen intakes per kilogram were decreased for the five subjects, all showed average daily weights increased during the experimental period. The largest increases in average daily weight were by J. M. and B. F., (Group III) who also showed an increased rate of nitrogen retention (24 to 29; 20 to 36 mg. per kilogram of body weight, respectively) while the other three subjects showed decreases (43 to 19; 27 to 26; and 13 to 10 mg. of nitrogen per kilogram of body weight per day).

P. W., whose total diet was increased during the experimental period because of increased growth demands, illustrates the significant changes that may take place in the intake of the complex carbohydrates when a diet is augmented. Beyond this, the case is of no comparative value in the discussion contained herein. It is pointed out in another communication (14) that in this study of children whose calorie intake was controlled within 4 calories per kilogram of body weight per day, the alkaline-ash and acid-ash values of the food intakes per kilogram of body weight were practically constant throughout both the pre-experimental and experimental periods, although in the intakes the mineral cation-excess per kilogram was increased by approximately 50 per cent during the experimental period by the additional banana.

From the foregoing presentation it is evident that there are other motivating factors besides quantity intake of nitrogen which produce increases in nitrogen retention and growth of soft tissue when conservative amounts of banana (from 100 to 200 gm. per day) are added to the diet. This study indicates that the

unavailable carbohydrates may have a protein-sparing action and that the character of the fiber (*i.e.* the proportion of lignin to cellulose and hemicellulose) may have physiological importance in the diet. It is apparent that the carbohydrate content of foods and their proportionate composition is a fertile field for further investigation and that dietary food changes which have been supposed heretofore to have little significance may exert an important influence upon nutrition through alteration of the carbohydrate constituency of the total diet.

SUMMARY

The lignin, cellulose, and hemicellulose content of 14 foods commonly used in diets are presented together with data upon the effect of altering the proportionate carbohydrate content of the diets of 9 normal children between the ages of 5 to 8 years by the addition or substitution for cereal of 100 gm. banana per day. Each subject acted as his own control during pre-experimental periods of from 30 to 55 consecutive days (total, 330) immediately followed by experimental periods of 20 to 45 (total, 310). Each child's diet was composed of the same common foods but quantities were varied according to the age, size, and activity of the individual. Differences in the quantities of apple included in the diets of the different groups of subjects permitted comparison of the effects produced by similar quantities of total carbohydrate whose proportional composition varied. The subjects were known to be in an excellent nutritive state and the investigation was rigidly controlled under conditions comparable to the usual home environment.

The carbohydrate analyses of the foods demonstrate the varying unavailable carbohydrate content of different foods and the dissimilar distribution of lignin, cellulose, and hemicellulose in foods which are approximately equal in amount of total residue (fiber). During the experimental period the mean daily intakes of lignin, cellulose, and hemicellulose were changed from 62.7, 114.2 and 117.9 mg. per kilogram per day to 79.8, 117.1 and 109.7 mg., respectively.

It is indicated, therefore, that the unavailable carbohydrate distribution in a diet may be altered without changing the total fiber intake or the caloric value of the daily diet; that an altered distribution of the unavailable carbohydrates (lignin, cellulose and hemicellulose) has an influence upon nutritional processes; that the source (food) in which the fiber is provided affects the response of the body to it; and, that other constituents (pectin, vitamins, tannin) or properties (alkalinity) of a food, as well as the level of intake, may vary the physiologic response.

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THE BANANA AS A FOOD FOR THE AGED[1]

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IN 1790 the life expectancy in this country was about 35 years and there was little increase in the succeeding 100 years. But in the 20 years from 1890 to 1910, the discoveries of the bacterial origin of many diseases began to bear fruit, and in this short period there was as much progress in increasing the life expectancy as in the previous century. By 1935 the widespread application of modern science in public health had augmented the figure to 60 years. The result has been a very considerable alteration in the proportion of elderly persons in the population of the United States and this trend has been given some further momentum through the lowering of the birth rate. In 1900 there were only 13 persons over 60 years of age per 100 persons; in 1935 the ratio became 17 to 100, and it is predicted that if present trends continue, it will be about 34 to 100 by 1975. This aging of the population alters our outlook for the future and brings increasingly to our attention the needs of people who are more than 60 years of age. This applies to all aspects of living, and very significantly to food. If the years from 60 to 80 are to be made worth while to the person and the society of which he is a part, health and vigor must be maintained to the greatest degree possible.

Much experimental work in the field of nutrition in recent years has direct bearing on the relationship between the diet and the kind of old age which follows. Sherman (1) and his associates have shown that a diet considered adequate in the sense that it would induce good growth and maintain the adult through a reasonably long life, could be improved by enrichment in certain minerals and vitamins. The result has been not only improved growth and a higher level of adult vitality, but also an extension of the average length of adult life, with a deferred and shortened period of senility. A great deal of evidence has been collected to show that when the "protective foods" are given an important place in the dietary, the incidence of the so-called degenerative diseases is decreased along with the postponement of the signs of actual senility.

From such researches we have come to understand that diets for the old should be more like those for the young in their content of protective foods than had formerly been thought necessary, and that, paradoxically, a diet richer in minerals and vitamins makes it possible to eat with comfort and profit a wider range of foods. Many of the milder digestive disorders are often eliminated by a liberal intake of vitamin B_1 (thiamin) (2) and the "characteristics of youth" are better retained with generous supplies of vitamin A, vitamin G (riboflavin), and vitamin C (ascorbic acid).

Among the changes in point of view wrought by the newer knowledge of nutrition are those with regard to the value of various foods in the dietary.

[1] Received for publication July 1, 1939. Supported in part by a grant from the United Fruit Company.

Thus tomatoes, once regarded as dangerous, are now prized because of their high content of vitamin C. Likewise the banana was at one time regarded as a food likely to cause digestive disturbance. Now many studies of the banana as a food for babies and young children have shown that if this fruit is suitably ripe and properly prepared, it can be eaten without any difficulty. Bogert (3) has summarized researches on the banana in the diets of infants and young children up to 1935, and Macy (4) and Roberts (5, 6) have contributed recent papers affording further evidence of the value of this food in children's diets.

Whether the banana would be equally successful as a staple food in old age seemed a question worthy of investigation. For most people, activity decreases with advancing years and there is a lessening of muscular tension, so that both the basal metabolism and the total energy requirement are progressively lowered and the proportion of those foods which furnish calories with small accompaniment of other nutrients needs to be reduced. The loss of teeth also brings dietary problems, as the difficulty of mastication restricts the dietary to the softer, less resistant types of food. Furthermore, strains on the digestive tract and the kidneys are to be avoided as recovery is less easy than when the body has the resilience of youth.

A study involving any change of food habits for the aged, therefore, presents problems differing from those encountered in a study of children or active adults. It is essential to avoid arousing prejudices which may result in refusal to participate. An especially fortunate opportunity for a study of the place which the banana might have in the diets of the aged arose at the close of a series of dietary studies conducted by the authors in a number of homes for the aged in and about New York City.[2] From these, six small homes were selected for the banana study, where the closest contact with both management and guests was possible for the investigators. In these homes each superintendent had intimate daily association with every resident and knew their habits and health status in detail. In one home a 3-month dietary study preceded the banana experiment, and in three other homes such a study had been conducted for a month. In two of the homes the dietary studies had to be postponed because circumstances were unfavorable at the beginning, but menus were obtained for a month and conferences held with the management so that the general dietary situation was known and the interest of the guests secured.

The objectives of the study were: to find out whether one banana a day would be tolerated by elderly people without digestive disturbances; to discover to what extent prejudices or idiosyncrasies would result in refusal to eat bananas; and to learn whether bananas would be more acceptable in their natural state or combined in various dishes.

With the approval of the superintendents, bananas were supplied at the conclusion of each dietary study (or of

[2] The dietary studies will be reported later. Thanks are due to Beatrice Hall, secretary of the Division of the Aged of the Federation of Protestant Welfare Agencies, Inc., through whose introductions invitations to many homes were received, and also to the superintendents and other officers in the homes who made it possible to obtain the desired data.

the preliminary period of observation in the two homes where these were not made beforehand), so that each guest might have one banana daily for at least 2 weeks.

The importance of the proper psychological approach is shown by the experience in a home for aged men and women which seemed well adapted for such an undertaking. An inadvertent remark of one of the staff about the "banana experiment" was a cause of surprise and disappointment, since upon hearing it every one of the 18 old people refused to eat a single banana, though they had previously been enjoying these regularly three times a week as part of their regular dietary.

Each home had a physician on call and in one home he made regular visits twice weekly. In two of the homes the matron was a graduate nurse and in two others there were three nurses on duty regularly. In two homes the same matron had been in charge for 5 years and in one the superintendent (a man) had been there for 8 years. Thus the customs of the homes were well established and the health and dietary history of all the guests over a considerable period of time could readily be ascertained.

During the periods when bananas were served, frequent visits were made to each home. An outstanding observation was the generally good appetite and digestion of these elderly people. Relieved of worry or taxing labor and given food chosen as far as possible with regard to their tastes, they manifested no special problems of indigestion or of constipation and ate their meals regularly and with apparent satisfaction. Every superintendent reported very little use of common laxatives.

The shortest period of banana feeding in any one home was 2 weeks and in two homes it was one month. In two homes, 2 bananas apiece were eaten daily for approximately 2 weeks. In one of these homes the period of serving 2 bananas followed one of 20 days in which one banana a day had been consumed, so that 8 women ate bananas daily for 33 days with only one break of 9 days between the two periods.

The location of these homes, the number of guests, the periods during which bananas were served regularly every day, and the responses of the guests may be briefly summarized as follows:

In Home I, located in the Bronx, New York, the matron is an experienced graduate nurse who has been in charge for the past 5 years. The guests, 11 women, all in good health, ranged in age from 64 to 89 years, 7 being between 75 and 85 years. In this home bananas have been a part of the regular diet, as shown by the detailed dietary study for 2 months during which bananas in their natural state were served five times for breakfast and six times for supper. Two bunches of bananas were eaten in this home, the first during 10 consecutive days and the second (sent after a two-week interval) during an 11-day period, 21 per capita in all. The fruit was enthusiastically received as a gift and thoroughly enjoyed. The bananas of the first bunch were served in their natural state, care being taken to see that they were properly ripened to the stage of brown flecks on the skin. Many times the women carried them to their rooms to eat at their pleasure but some liked very much to slice them over their breakfast cereal. During the second period, an attempt was made to serve

the bananas in a variety of ways, but the women, accustomed all their lives to very plain fare, did not take kindly to the innovations. Orange gelatin with banana custard sauce was approved, but banana tapioca cream was declared "too rich", and two women on this occasion ate only a part of their serving. Banana ice cream was enjoyed, but was also considered "too rich" to eat more than half the usual portion. The consensus was that fresh bananas were best, so for the rest of the 11 days in the second period these were placed on the table, usually at the noon meal. Frequent visits were made to the home during the whole time and conferences with the matron revealed no digestive discomfort except in one woman of 80 years, who reported some discomfort after eating the banana ice cream for Sunday and Monday dinners. However, the following Wednesday she ate her banana sliced over vanilla cornstarch pudding with apparent relish, and thereafter, like most of the rest, took her banana to her room to be eaten later in the afternoon with no more complaints.

Home II, also located in the Bronx, is for aged negroes. The same matron has served for the past 5 years. Of the 8 women guests, only 2 were under 65 years of age at the time of the study, 2 were past 65 but under 70, 3 between 70 and 74, and one was 86 years old. For 20 consecutive days these subjects ate one banana apiece daily, and this period was followed, after a 9-day interval, by a second of 13 days in which 2 bananas were consumed daily by each person. No case of discomfort was reported. As in Home I, these residents were accustomed to very plain, simple fare, and preferred the bananas in the natural state. Bananas also proved acceptable in various combinations, and during the first 20 days they were served five times as salad with lettuce, four times sliced in a gelatin jelly, and six times as fritters. In the second period, when 2 were served daily, the women sometimes sliced them over their breakfast cereal or made banana sandwiches. The majority, however, carried them to their rooms to enjoy between meals. As the dietary was very low in vitamin C, on account of few fresh fruits or vitamin C-rich vegetables, and also rather low in vitamin B_1 (thiamin), the bananas were a distinct addition from the nutritional standpoint.

Home III, in Upper Manhattan, is connected with a large and wealthy negro church. There are 5 women residents, all but one over 80, the oldest being 97 years old. For this small family the matron is both housekeeper and cook, and is familiar with the tastes and habits of the guests. In this home two bananas apiece were eaten daily for 16 consecutive days without any symptoms of indigestion or complaints of monotony. This speaks well for the popularity of the banana's mildness of flavor, as the guests have not learned to like orange juice or grapefruit and as a result fresh fruit had appeared on the menu only twice during the month previous to the study. The regular use of the bananas greatly improved the vitamin C intake, which was otherwise very low.

Home IV in the Bronx is a home for destitute elderly gentlewomen. At the time of the study there were 44 guests, all but one over 65 years of age, the majority being between 70 and 85, with one aged 90. The house staff in-

cludes the superintendent and housekeeper and three nurses. The physician calls regularly twice a week. The month's dietary study showed an excellent provision of milk, vegetables, and fruits, including bananas frequently, so that no very marked change in the character of the dietary resulted from the inclusion of one banana daily for 30 days. Before sending the fruit to this home, the matter was discussed with the physician, who gave his cordial approval and agreed to be on the alert for any possible digestive disturbance. At the end of the period of banana feeding he declared that there had been no deleterious effects whatsoever. It seemed especially significant, in this home where gracious living is emphasized and monotonous menus viewed with disfavor, that the guests were willing to eat the bananas daily for so long a time. Of the 44 there were only two who refused to eat them and these had the reputation of being generally non-cooperative.

Home V in Staten Island, is maintained for the women in families of seamen. There were 19 in residence in the first period and 20 during the second. The matron, an experienced graduate nurse, is assisted by three other nurses. The attending physician took great interest in the banana study. Only 2 of the guests were under 70 years of age, 10 were between 70 and 79, and 8 between 80 and 89. Owing to an impending change in cooks and the vacation of the matron, a dietary study was not deemed practical, but very cordial consent was given to the banana study and for 21 consecutive days one banana was eaten daily by all but two of the residents. These refused to participate, saying that they "never had eaten bananas and they never would". A second period of feeding one banana daily for 9 days was instituted about 5 weeks after the close of the first period. The bananas were enthusiastically received, as many had thought themselves benefited by those eaten in the first period. The physician and the matron agreed that there had been improvement in the vigor of the women. One, 82 years of age, was discovered upon her hands and knees dusting the floor under her bureau. Upon being chided for this undue exertion she replied, "I can do this now, because I am stronger since I eat a banana every day." One woman who was a cardiac case was doubtful at the outset as to her ability to follow the banana routine, but nevertheless continued to eat one daily throughout the whole time with no undesirable effects. In this home, bananas were popular before the special study, having been served regularly Sunday nights for supper.

Home VI, also in Staten Island, is maintained for people of Swedish origin. The superintendent had occupied his position for the past 8 years. There is no nurse but a physician is on call. There were 16 men guests and 14 women, of whom all but one were over 65 years of age, the majority being between 70 and 79, and 5 between 80 and 86. The general good health is attested by the fact that the physician was called only three times in the past year.

Menus were collected for a month preliminary to the banana feeding and much information gained about the food habits. Very little fresh raw fruit or fruit juice was served although stewed

fruit was generally provided for supper. In this home one banana apiece was eaten daily for a total of 16 days. The superintendent was much interested in the popularity of the bananas and the fact that they agreed so well with these old people. Since in this home the vitamin C content of the diet was obviously low, the inclusion of the bananas made a definite improvement in the quality of the dietary.

Supplementary to this intensive feeding of bananas in 6 small homes to 112 aged people, 80 per cent of whom were 70 or more years of age, information regarding attitudes toward bananas was gained in three much larger homes in which dietary studies were made but no special feeding of bananas instituted. The age range of the guests was similar to that in the other groups, only 2 persons being under 65 years of age and 11 over 90. In each home there was adequate nursing service and a physician always on call.

In Home VII in Bloomfield, N. J., with 60 guests, mostly women, a 2-month dietary study showed that fruit is customarily served only on Sundays and holidays, but bananas were served at 6 of the 14 breakfasts. The matron, who had been in charge for 7 years, reported that bananas agreed well with her old people. As in the other homes, they liked to carry them to their rooms, to eat at their pleasure.

Home VIII in Manhattan, cares for 56 men and 30 women. Fresh fruit is served on Sundays and holidays and stewed fruit on other days. In the month studied, bananas were served two out of the six times when fresh fruit appeared on the breakfast menu and for one dinner an orange and banana custard was served. The housekeeper reported that the guests are very fond of bananas.

Home IX, caring for 12 men and 108 women, employs a professionally trained dietitian who has had wide experience in hospitals and homes for the aged. During the month of the dietary investigation she served bananas for breakfast five times and for dinner once. No digestive disturbances from eating bananas have ever been observed, and they are distinctly popular.

SUMMARY

In 6 homes where the guests ranged in age from 65 to 90 years, fresh ripe bananas were consumed daily for from 16 to 30 days by 117 persons. All had medical supervision and all but one, resident nursing service. Only 5 guests refused to cooperate, due to long-standing prejudice. The bananas were well liked and gave rise to no digestive disturbances.

In two homes 13 women each consumed 2 bananas daily for periods of 13 to 16 days. In one of these homes the period of feeding 2 bananas daily followed one of 20 days in which each person had eaten one banana a day, so that 8 women ate bananas daily for 33 days.

In four of these homes, little fresh fruit was provided and the bananas very definitely increased the vitamin C content of the diet. Aside from the citrus fruits and tomatoes, there are few foods easily eaten by old people which will furnish as much vitamin C as a banana.

Supplementary observations in three homes caring for 268 guests, 75 men and 193 women, indicated that fresh ripe

bananas are well liked and digested without difficulty by people beyond the age of 65 years.

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Hospital Diets in Norway

IT MAY SEEM STRANGE that in Norway a question should arise concerning uniformity of hospital diets. But the inequality of man cannot be ignored, however perfect the doctrines of socialism may be in theory, and even in our public hospitals class distinctions are being made. Dr. Erling Rustung, who is attached to the University Hygiene Institute in Oslo, recently addressed a circular to the 136 hospitals mentioned in the 1938 year book of the Norwegian Medical Association asking the directors to answer several questions concerned with the board and lodging of their patients. He obtained replies from 111 hospitals, in 68 of which it transpired that the board and lodging were the same for all. In 29 hospitals single bed wards and better food could be obtained on the payment of an extra charge. There were also 8 hospitals with three dietaries at as many different prices. In their replies to Dr. Rustung, several of the hospital directors commented on this problem of better food for richer patients. One of them wrote that the patient's food in a hospital is a part of his treatment and it is therefore monstrous to draw a dietetic distinction between poor and rich. There can be only one treatment, and that the best. But a few correspondents leavened their socialism with the reflection that the finances of a hospital may be aided by letting the rich pay comparatively big fees in return for certain dietetic privileges. In most cases, however, it is clear that a uniform dietetic standard is that which is most in vogue in Norway and that which is approved of by most of the authorities responsible for hospital administration.—*Foreign Letters, J. A. M. A., 113: 2335, 1939.*

THE RELATION OF HUMAN NUTRITION TO THE SOCIAL AND ECONOMIC CONDITION OF THE SOUTH[1]

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WE, AS Southerners, are proud of the cultural heritage of the South. There is a large and constantly growing body of literature devoted to the beauty and charm of the southern way of living, and to the heroism, in adversity, of the men and women of the South. In recent years, however, there has arisen another, and also constantly growing body of literature devoted to a different aspect of southern life—one of which we are not proud. The tenant farmer and the share cropper have been the theme of drama and novel almost *ad nauseam*. Such fiction, however, together with the statistics hurled at us by economists and sociologists, has made it impossible for even the staunchest Southerner to remain unaware of the fact that all is not well with the South.

While most thinking people have long been aware that the South is facing grave economic problems, the report to the President, of the National Emergency Council on *The Economic Conditions of the South* (1), published in July 1938, came as a shock to many of us. We had not realized that the situation was as bad as the incontrovertible statistics of the report showed. In this report nutrition was referred to only incidentally, but the interrelationship of nutrition and social and economic conditions was given recognition when the League of Nations appointed a Mixed Committee to study and report on the relationship of nutrition to economics, sociology, and agriculture from an international standpoint. In the following paragraphs an attempt has been made to point out a few of these relationships as they apply to the South.

In attempting to correlate nutrition with economic and social conditions, one finds oneself immediately entangled in one of the numerous vicious circles that are constantly deflecting efforts at straight thinking. Do bad economic conditions, through their influence on income, affect physiological efficiency so adversely that the will or the ability to overcome these same economic conditions is destroyed? And in attempting a remedy should we start with economic conditions or physiological inefficiency or both? If we could reproduce the miracle of the loaves and the fishes and feed the multitude, would the multitude gird up its loins and go forth to do battle against economic ills? By improving economic conditions we can almost certainly improve physiological efficiency, but will this improvement be reflected in a higher cultural level that will prevent a recurrence of economic difficulties? Such meditations seem to lead nowhere, so perhaps it is better to ignore them and start with the simple premise that healthy people are greater economic and social assets than unhealthy ones. With this in mind, it seems fairly clear that nutrition is related to economic and social conditions through its relation to health; and one

[1] Presented before the Texas Dietetic Association, Austin, March 24, 1939.

can point out such obvious things as the economic loss brought about by the inefficiency of workers, in so far as this inefficiency is due to ill health, and to the economic factor involved in the cost of illness whether this cost is borne by the individual or by society. The importance of nutrition as a factor in health is at last beginning to be realized as scientific research continues to produce proof of its significance. It might also be pointed out that nutrition bears a relationship to social conditions in that hungry people are not happy people and conditions which result in the poverty of large sections of the population with consequent malnutrition and misery bring about discontent and social upheaval, or lead to an apathy which, by all odds, is worse than rebellion.

There is, however, a less apparent but more important relationship between nutrition and economics in that poverty curtails the consumption of food which, in turn, curtails the production of those agricultural products used as food. Thus poverty reacts unfavorably on agricultural production.

If some new type of world dictator should decree that every individual must be supplied with the optimum amounts and the proper kinds of foodstuffs necessary for physiological well-being and that agriculture must be adjusted to supply these demands, it would mean that a very much larger area of the earth's agricultural lands would have to be devoted to the production of foodstuffs, particularly the protective foods. That this is true for the world at large has been shown in the reports on agriculture and nutrition (2) presented to the Mixed Committee of the League of Nations by the various countries involved. In regard to protective foods, it has been pointed out that the demand for this type of foodstuff can be increased only when the price of energy-bearing foods is low in proportion to income. Moreover, since the protective foods include eggs and milk and the energy foods are necessary for the production of these, it would seem that an increase rather than a decrease in the amount of cereal produced would be involved.

Such an adjustment as outlined above would presumably benefit agriculture in the South. The increased food crops would supply nutritional needs and would at the same time have a higher cash value than the present commercial crops.

Dixie, for the purpose of discussion of economic problems, is often divided into two parts. In the report on the economic conditions of the South, referred to above, the Southeast consists of Virginia, North Carolina, South Carolina, Florida, Georgia, Mississippi, Alabama, Arkansas, Tennessee, Louisiana and the Southwest of Texas and Oklahoma. According to the regionalists, the Southwest is a section unto itself and consists of Texas, Oklahoma, Arizona and New Mexico (3). The regionalists base their divisions on similarity of economic and cultural problems as brought out by some 150 indices (4). Much more material is available on the economic problems of the Southeast than of the Southwest. It would seem, however, that problems involved in the relation of nutrition to social and economic life are quite similar in the two regions, especially if only Texas and Oklahoma are considered as

the Southwest. Odum (5) summarizes one of the chief problems of the South in the following sentences. This region, he says, "presents the dilemma of an agriculture devoted to the production of an export crop with exports on the decrease. This commercial farming policy is in an area preeminently well adapted to food crops and diversified farming with nearly half its people living below any reasonable standard of culture and abundance." Odum (6) further points out that in the continued emphasis on cotton production, the South is playing a losing game since competition is so keen as to make it unlikely that the South, with its despoiled land and its boll-weevil problem, will ever again be able to make cotton production, on a large scale, pay. He states that in Texas and Oklahoma, alone, enough cotton can be produced to supply the world market for United States cotton, and that cotton can be grown more cheaply in these states than in the Southeast. Thus there is competition within as well as without the region.

An excellent example of the relationship of economic conditions to nutrition is found in the following paragraph by Rupert Vance (7).

> Among the most obvious of the traits associated with cotton are the food habits of its growers. The immense amount of man labor in planting, chopping, and picking cotton comes at times which interfere with the cultivation of other southern crops. Consequently the family on the one-horse cotton farm has been driven by compulsion to the most efficient of all food-stuffs that can be made to suffice. Corn is suited to the southern climate and is an efficient producer of cereal carbohydrate. A dietary survey conducted during the war found that the maize kernel constituted 23 per cent of the total food intake of Tennessee and Georgia mountaineers and 32.5 per cent of that of the southern negroes in contrast to 1.6 per cent of the diet of northern families in comfortable circumstances. Hogs thrive on corn and, since they complete their growth in one season, may be regarded as comparatively efficient producers of meat. According to Armsby, 24 per cent of the energy of grain is recovered for human consumption in pork as compared with 18 per cent in milk and 3.5 per cent in beef and mutton. The cheaper cuts of fat pork, salt cured, become the year round staple of diet. Surveys have shown that pork often amounts to 40 per cent of the value of all articles of food consumed by southern farmers. Sorghum and sugar cane grow easily in the South and produce, without demanding too much labor, a food of high sugar content.

So, we have the famous three M's and a pellagra-ridden population as a direct result of agricultural policy. However much the production of cheap nicotinic acid may help in the control of pellagra, and indications are that it offers a great deal in immediate and widespread relief from the worst effects of subsistence on a one-sided diet, it seems hardly possible, as stated in *Life* (8), that the distribution of cheap nicotinic acid will enable tenant farmers and share croppers to attain health even on their staple diet of meat, maize, and molasses. Other deficiencies are certainly involved.

While adequate income does not guarantee adequate nutrition, numerous

dietary studies in many nations have indicated a parallelism between nutritive state and food expenditure and the latter is, of course, determined by income. Improvements both in the quantity and quality of diet generally accompany a higher outlay on food. The improvement in quality may be explained by the fact that the protective foods are more expensive as sources of energy than foods of less nutritive value. As income improves calories are purchased from more varied and expensive sources which are usually, although not always, more nutritive. Investigations have shown that with increase in income important increases in the consumption of fruit, vegetables, dairy products, meat and eggs occur. The average per capita income of a region may be taken as a rough indication of the state of nutrition to be expected although it should not be forgotten that high average income is not incomparable with poor nutritive conditions in large proportions of the population. This is, of course, because of unequal distribution of income. Odum (9) gives a vivid illustration of this in the following paragraph:

> Within the great range and variety in the southeastern states may be found two contrasting pictures. One portrays the excellence of southern cooking with its contribution to the art of living and the other, the subsistence diet of the masses of marginal folk commonly described as a major factor in deficiencies of vitality and health. The one reflects superlatives in both quality and quantity. The other features woeful deficiencies in quantity and kind such that, to some biologists, diet appears to be a coordinate factor with heredity in the conditioning of these marginal folk.

The average income of the South is not high, either in relation to that of other parts of the nation or in comparison to the minimum amount of money estimated as necessary for the purchase of adequate nutrition. In the report to the President (1) are found the following statements:

> The richest state in the South ranks lower in per capita income than the poorest state outside the region. In 1937 the average income in the South was $314; in the rest of the country it was $604 or nearly twice as much. Even in "prosperous" 1929 southern farm people received an average gross income of only $186, as compared with $528 elsewhere. Out of that $186 southern farmers had to pay all their operating expenses—tools, fertilizer, seed, taxes and interest on debt—so that only a fraction of that sum was left for the purchase of food, clothes and the decencies of life. For more than half of the South's farm families—the 53 per cent who are tenants without land of their own—incomes are far lower. Many thousands of them are living in poverty comparable to that of the poorest peasants in Europe. A recent study of southern cotton plantations indicated that the average tenant family received an income of only $73 per person for a year's work. Earnings of share croppers ranged from $38 to $87 per person, and an income of $38 annually means only a little more than ten cents a day.

Dr. W. P. Webb of the University of Texas in his recent book *Divided We Stand* (10) gives the following illuminating information in regard to distribution of wealth in the United States.

> The West and the South comprise nearly 80 per cent of the area of the

> United States. They produce all the gold and silver, 95 per cent of the oil, 45 per cent of the coal, 90 per cent of the lumber and 63 per cent of the agricultural dollars. In the face of all this they hold, at the most liberal estimates, less than 20 per cent of the money and probably not more than 5 per cent.

In many agricultural regions money income plays a less dominant rôle in determining food consumption than it does in urban communities, owing to the production on the farm of food for family consumption; but in the cotton belt, as has been pointed out, there is little time or energy left for home production of foodstuffs and in tenant farming and share-cropping home production is discouraged as being inimical to the best interests of the land owners. The problem is further complicated by the fact that there are fewer productive adult workers and more dependents per capita than in other sections of the country. Industrial wages in the South are also the lowest in the United States. A recent survey (1) showed that the average annual wage in industry was only $865 while in the remaining states it averaged $1,219.

The cost of adequate nutrition will, of course, vary with food prices in different parts of the country. For central Texas, rather careful studies made in the nutrition courses at The University of Texas show that, during the past five years, this has varied from $1.78 to $2.12 per person per week. From data given by Carpenter and Stiebeling (11) it may be estimated that an adequate diet cost $2.80 per person per week in 1935. This cost is based on average prices for the country as a whole. Stiebeling and Phipard (12) state that "with dietary habits and retail price levels of 1935, the level of food expenditure above which families were able to purchase adequate nutrition was . . . $2.15 for East South Central States [per person per week]." Thus it would seem that $100 per person per year represents a minimum cost for adequate nutrition in the South. The average annual per capita income of tenant farmers of the South has been given as $73 (1). These figures serve to show rather conclusively that our nutrition problem is primarily an economic problem. In the report to the President (1) we read that even in southern cities from 60 to 88 per cent of the families of low income are spending for food less than enough to purchase an adequate diet. However, in the dietary study of Stiebeling and Phipard (13) referred to above, it was found that the percentage of diets estimated as "poor" was lower for the east south central section than for any other section except the Pacific. The percentage of diets estimated as "poor" for the north Atlantic states was 57; east north central, 60; east south central, 40; and southern negroes, 64.

While cereals and other energy-bearing foods retain an important place in human nutrition, there has been a definite trend during recent years toward the consumption of larger amounts of the protective foods. This is shown by statistics on the growth of the dairy industry and on the consumption of vegetables and fruits, particularly the citrus fruits. That this desirable tendency in food consumption habits exists in many of the low, as well as all of the

high-income groups, is shown by numerous dietary studies. It is not, however, characteristic of the diet of the low income group of the South since incomes here have not increased in proportion to the general average and conditions are such as to throw emphasis on the quantitative rather than the qualitative aspect of nutrition. In some fairly recent dietary studies of a low-income group in Texas the percentage of calories coming from dairy products, fruits and vegetables was far below that reported as characteristic of the low-wage group in the dietary study referred to in the preceding paragraph (14).

Cheap labor in the South has been a means of attracting industry, but cheap labor usually means the presence of a different race or nationality with low standards of living and a low cultural level. The low wage level maintained in one group tends to lower the general wage level and, in turn, the economic level of the region involved. The large number of negroes in the South and negroes and Mexicans in the Southwest has undoubtedly had this result. Many economists have pointed out that only by furthering, rather than hindering, the economic development of the negro can the South assist in its own sound economic growth. The Mexican problem is, on the whole, peculiar to Texas. We have almost as many Mexicans as negroes. In 1930 the number was calculated as around 800,000 (15). It is estimated that 12–14 per cent of them are American citizens and many of them are descendants of Mexicans living in Texas when it was still a part of Mexico. While a few individuals and families are in a very favorable economic and social position, the prevailing picture is that of underprivilege—often extreme. Nearly half of the Mexican school children have parents classified as unskilled laborers. Among them, wages are pitiably low and employment exceedingly unsteady. On the whole the economic and social conditions of the Texas-Mexican is much inferior to that of the negro. Dietary studies of urban Mexicans (16) show alarming inadequacy, but no outstanding nutritional deficiency disease, comparable to pellagra in the Southeast, has developed. The percentage of underweight among young children is surprisingly small, but tends to increase rapidly with age. Mexican children are from 1 to 3 inches shorter than American children of comparable ages. The Mexican presents no small barrier to the economic and social progress of Texas.

Dr. Bernice Moore (17) in an article on the southern family asks:

> If such matters of family concern as health, diet, housing, education and recreation depend to a large extent on income and the income of the South is, for the majority, on a subsufficiency level, can the families of the region be expected to produce quality folk in terms of non-material values—attitudes, ideals and sound public opinion? Can a philosophy of adequacy—social, economic and political—be instilled into the family group that has never known adequacy in any sense of the word?

We like to think of Southerners as "quality folks." We must earn the right to do so by finding some remedy for the apalling conditions that have been so forcefully brought to our attention.

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The Selective Meal in the Hotel

The vogue for the selective meal, which is growing very rapidly, has much merit. It started outside of hotels, has largely killed extensive use of strict à la carte in hotel restaurants and hotels have been forced to follow suit. The selective meal makes a new demand on the culinary department which is important to note. It is this: in making the menu, various *combinations* are presented and instead of the patron making or choosing his own combinations they are made for him. It follows that the menu maker to be successful should know dietetics; otherwise unpalatable, unhealthy and even ridiculous combinations are presented, evidence of which we can find very easily. Furthermore, the rapidly growing army of people who pay strict attention to what they eat from the dietetic or "regimen" point of view are not pleased unless the combinations are agreeable to them. As never before, dietetics has become a practical requirement in restaurant management. As a matter of fact, dietetics has become a major influence in restaurant operation; we must pay more attention to it or we cannot compete with outside restaurants which are ahead of us and more scientific in this particular.—*Boomer, L.: Problems That Confront the Culinary Profession, The Hotel Monthly, December, 1939.*

A DIETARY STUDY OF BOYS AND GIRLS ON A LACTO-OVO-VEGETARIAN DIET[1]

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THE nutritional needs of boys and girls of the late adolescent period have not been well defined; in general the available standards are largely based on theoretical considerations. Moreover, knowledge concerning the actual food consumption of this age is limited. Herein are presented data regarding the food intakes of approximately 50 boys and girls, 14 to 19 years of age, for a period of 30 days. Altogether, 719 daily records were secured for girls and 961 for boys.

The study was made at a boarding school of junior college rank, in which one of the authors has worked for several years as dietitian. The system of serving was well established, and the recipes and servings had been carefully standardized. Inasmuch as cafeteria service was used, opportunity was provided for free choice of food within the limits of the variety offered. Because of the religious beliefs of the denomination sponsoring the college, meat was not served, and the diets were essentially lacto-ovo-vegetarian. Another unusual feature was the strict abstinence from tea, coffee, and excessive condiments. A further control was the assessment of $12.00 per month as a minimum charge for board for girls and $14.00 for boys, limitations which were enacted for the purpose of preventing unwise economy in the selection of food.

[1] Received for publication, July 25, 1939.

METHODS OF STUDY

The nature of the study was explained to the students at an assembly period and their cooperation solicited. Only those students were selected who took all of their meals in the college dining hall. Recipes were carefully checked, and the nutritive value of each serving of cooked food was determined by calculating the value of the total recipe and then dividing this by the number of servings yielded. The individual ingredients of the recipes were measured or weighed, and the servings were also carefully standardized. The plan of the menus during the study was that customarily followed. At all meals the counter afforded milk in pint and half-pint bottles, butter, and a variety of breads made with white flour or 40, 60, 80, and 100 per cent whole wheat flour, also raisin bread, corn bread, and occasionally biscuits. The bread most frequently chosen was 80 per cent whole wheat. In addition, the breakfast menu consisted of six prepared cereals, two cooked cereals, several fresh fruits, two cooked dried fruits, and two of the following three foods: potatoes, eggs, or toast with cream sauce. The dinner menu included one meat substitute, one cooked dried legume, potatoes in some form, two cooked succulent vegetables, one salad, and one dessert. At supper, as at breakfast, there was a choice of prepared cereals, fresh fruits, and, in addition, a soup, a starchy dish, a succulent vegetable or salad, and canned fruit.

From the group of serving girls, the most careful were selected to serve all three meals for the duration of the study. Blank forms which merely required checking as the students passed with their trays were used each day. At each meal, a responsible student at each table was asked to record all leftover food on the trays, but usually little was left. Each evening at student assembly, records were secured of all food eaten that day other than in the dining room; however, there was little outside eating.

No student was included in the study for whom accurate records were not available for 28 days. When a student was ill or ate an entire meal away from the college, the record for that day was rejected. Usually records were secured for 32 days, and altogether 29 boys and 23 girls were included.

Calculations of calories, protein, calcium, phosphorus and iron were made in the main according to the tables by Rose (1). For some of the prepared cereals, information was secured from the manufacturers.

NUTRITIVE VALUE OF FOOD EATEN

Table 1 shows the calculated intake of the girls. Each figure represents the average for approximately 30 days. For comparison, the standards used for calories were those recommended by Rose (2).

Other standards selected were 10 to 15 per cent of the total calories in the form of protein; 0.67 to 1.0 gm. calcium; 1.0 to 1.32 gm. phosphorus; and 0.012 to 0.015 gm. iron. The Baldwin-Wood weight-height-age tables were used for comparing weight and gain in height during the year.

Only 8 of the 23 girls had average calorie intakes within or above the standard range. These were all in the 18 and 19-year-old groups; all of the girls of 14, 15, 16, and 17 years failed to secure the requisite number of calories. Only one girl had more than the maximum allowed by her standard, while 15 received on the average 12 per cent less than the lower limit. Six of the girls had protein within the range of 10 to 15 per cent of the calorie requirement; the protein intakes of the remaining 17 girls were on the average 15 per cent below the lower limit. As with the calories, all of the higher protein intakes were in the 18 and 19-year-old groups. Many more of the calcium intakes were within the limits of the calcium standard; only 7 of the average daily intakes for the girls were below the lower limits. The phosphorus intakes of 13 girls were below the standard, and these deviations averaged 11.1 per cent. There were no iron intakes over the upper limit of the standard given; in fact, the iron intakes of only 2 girls came within the standard. Twenty-one of the 23 girls received on the average less than 12 mg. iron per day.

A comparison of weights with standards showed only 3 of the girls to be more than 7 per cent below the standard. The deviations ranged from −16.9 per cent to + 23.1 per cent. The average deviation from standard of weight for height and age of the entire group of girls was +0.8 per cent. Eleven of the 23 girls grew taller during the year; the average increase was 0.7 inch. Nineteen of the girls gained weight during the year; the average gain was 9.6 pounds. Four of the girls lost weight; the average loss was 3.3 pounds.

The average daily calorie intake of the boys was about 10 per cent below the

lower limit of the range selected as standard. The intakes of only 8 were within or above the range. Seventeen of the boys ingested amounts of protein within the standard while 12 had protein intakes which on the average were 13.4 per cent below the standard. In contrast, all of the calcium intakes were within the range or above the higher standard; the average deviation was 44.9 per cent. Similarly the phosphorus intakes were within or above the standards. The iron content of the food selected by the boys was also high.

Only 3 of the boys were more than 7 per cent below their standard weight. The extremes of underweight and overweight were −16.3 per cent and +14.0 per cent, respectively. Twenty-five of the 29 boys gained weight during the school year; the average gain was 8.9 pounds. Four lost weight; the average

TABLE 1

Nutritive Value of Diets of Girls

SUBJECT	DAYS	AGE	HT.	WT.	CALORIES	PROTEIN	Ca	P	Fe
		yr.	*in.*	*lb.*		*gm.*	*gm.*	*gm.*	*gm.*
1	34	14	61	104	1865	51	0.99	1.08	0.0087
2	30	15	64½	109	2080	57	0.73	0.97	0.0085
3	33	15	66½	122	2096	55	0.89	1.07	0.0080
4	29	15	67	155	2305	52	0.56	0.93	0.0122
5	31	16	64½	135	1852	49	0.70	0.92	0.0085
6	31	16	65½	119	2133	49	0.46	0.85	0.0104
7	28	17	63	128	1705	45	0.57	1.11	0.0105
8	31	17	63½	101	1970	52	0.80	1.01	0.0087
9	28	17	64	117	1825	47	0.92	1.00	0.0076
10	30	17	64	129	1678	39	0.63	0.76	0.0073
11	35	17	65½	128	2040	53	0.80	0.93	0.0094
12	32	17	67	130	1988	52	0.83	1.04	0.0091
13	35	18	62	122	1935	50	0.57	0.80	0.0090
14	31	18	63½	101	1800	50	0.94	0.98	0.0072
15	35	18	65	135	2382	69	1.70	1.68	0.0142
16	28	18	65½	123	2120	55	0.71	0.94	0.0095
17	29	18	66½	143	1976	49	0.68	0.98	0.0101
18	35	18	67½	138	2221	58	0.82	1.10	0.0098
19	30	18	68	147	2368	50	0.40	0.79	0.0106
20	29	19	60	106	1701	46	0.77	0.88	0.0080
21	36	19	64	123	2203	69	1.22	1.33	0.0103
22	29	19	65	119	2057	56	0.88	1.12	0.0089
23	30	19	66	160	2092	52	0.53	0.77	0.0084
Average . . .	31	17	64½	126	2017	53	0.79	1.01	0.0094

Table 2 shows the average nutritive value of the daily dietaries of the boys.

loss was 2.8 pounds. Fifteen of the boys gained an average of 1.5 inches in height.

tions from standards of boys and girls are striking, particularly as regards minerals. The significance of the ob-

TABLE 2

Nutritive Value of Diets of Boys

SUBJECT	DAYS	AGE	HT.	WT.	CALORIES	PROTEIN	Ca	P	Fe
		yr.	*in.*	*lb.*		*gm.*	*gm.*	*gm.*	*gm.*
1	33	14	64	98	2954	81	1.13	1.61	0.0169
2	28	14	67	145	3132	89	1.84	1.93	0.0145
3	33	15	64	126	2456	65	1.04	1.64	0.0155
4	34	16	62	122	3418	95	1.34	2.20	0.0217
5	35	16	68	139	3560	98	1.54	2.12	0.0190
6	33	16	70	145	3569	103	1.83	2.20	0.0184
7	38	16	70½	156	3991	110	1.80	2.63	0.0235
8	31	17	65½	133	3170	87	1.26	1.89	0.0196
9	34	17	69	148	3575	98	1.35	2.19	0.0243
10	37	17	70	161	3424	95	1.38	2.09	0.0225
11	31	17	70½	154	2949	82	0.88	1.36	0.0157
12	36	18	66½	131	3136	96	1.57	2.11	0.0201
13	37	18	66½	135	3325	96	1.93	2.31	0.0192
14	37	18	67	136	3162	90	1.56	2.01	0.0177
15	30	18	68	141	2947	84	1.20	1.70	0.0176
16	33	18	69	140	2618	73	1.09	1.53	0.0146
17	31	18	70½	145	2560	72	1.06	1.51	0.0146
18	32	18	71	165	3338	91	1.30	2.23	0.0231
19	35	18	72	170	3249	100	1.64	2.06	0.0175
20	30	18	72	170	3432	102	1.87	2.27	0.0191
21	32	19	67	143	2779	77	1.06	1.61	0.0168
22	32	19	68	123	2430	69	1.12	1.49	0.0142
23	37	19	69	128	2876	95	1.30	1.75	0.0156
24	33	19	69	139	2111	57	0.71	1.19	0.0129
25	33	19	70	148	3242	106	2.03	2.33	0.0180
26	28	19	71½	155	3277	91	1.41	1.74	0.0150
27	34	19	72	150	3287	97	1.85	2.06	0.0157
28	33	19	72	152	4053	129	2.02	2.96	0.0302
29	31	19	74	176	2636	79	1.35	1.60	0.0136
Average...	33	17½	69	144	3126	90	1.44	1.95	0.0182

Table 4 enables a comparison between the average deviations from standards of boys and girls.

The differences between the deviation increases when it is remembered that the boys and girls had access to the same foods. The boys received an abundant supply of calcium and

phosphorus while the girls had scarcely enough. As regards iron, the difference was even greater, the boys having a wide margin of safety while the girls had little more than three-fourths enough. In the case of the girls, in less than 20 per cent of the 719 daily records was the intake as much as 12 mg. of iron. On the average, on only 6 of every 30 days did the girls secure this minimum amount. It is true that the calorie value of the diets of the boys was much greater than that of the girls; but the lower calorie intakes of the girls were not entirely responsible for the inferior mineral content of their diets. The mineral content of the diets of the boys and the girls per 100 calories is shown in table 5.

TABLE 3

Energy Requirement of Boys and Girls

AGE	CALORIES PER KILOGRAM	
	Boys	Girls
yrs.		
14–15	60–55	50–45
16–17	60–55	45–50
18–19	55–50	40–35

The girls consumed on the average 2017 calories per day. On the basis of the mineral content of the diets of the boys as shown in table 5, this number of calories would have carried 0.92 gm. calcium, 1.25 gm. phosphorus, and 0.012 gm. iron, amounts much higher than the actual content of the diets of the girls. It is apparent that given the same opportunity, the choices of the girls were much less advantageous nutritionally than the choices of the boys. An inspection of the diets suggests that an outstanding difference concerned the use of legumes, the boys choosing this food more frequently and in larger quantities. Tables 6 and 7 list typical menus chosen by each.

TABLE 4

Comparison of Nutritive Value of Diets of Boys and Girls

		CALORIES	PROTEIN	Ca	P	Fe	WT.
Average deviation from standards	Boys	−9.2%	−5.6%	+44.9%	+47.8%	+22.8%	−0.5%
	Girls	−8.6%	−10.9%	−2.3%	−5.0%	−21.1%	+0.8%
Number of negative deviations	Boys	21	12	0	0	0	14
	Girls	15	17	7	13	21	11

TABLE 5

Mineral Intakes per Hundred Calories of Food

MINERALS	GIRLS	BOYS
	gm.	*gm.*
Calcium	0.039	0.046
Phosphorus	0.050	0.062
Iron	0.00047	0.00058

DISCUSSION

The average daily calorie intakes of boys and girls were 3126 and 2017, respectively, both of which are slightly less than the standards for individuals of this age. The weights of both groups were nearly standard, and the general health and physical vigor were seemingly good. It is possible that the standards for

calories may have been too high for the subjects of this study. Numerous investigations have shown that basal metabolism may be decreased in the southern states, especially in those of low altitude (3, 4). All members of this group had followed the lacto-ovo-vegetarian practice over a long period of time, a condition which may possibly influence the basal metabolism (5). The absence of the use of any stimulants whatever, even coffee, may have occasioned a further decrease in calorie needs (6). It is suggested that under these living conditions 50 to 45 calories per kilogram of body weight for boys and 40 to 35 calories for girls may be a desirable figure, although it is recognized that the cases observed in this study are too few to form a basis for standards.

The superabundance of minerals in the diets of the boys demonstrates the potentialities of the lacto-ovo-vegetarian diet, but the inferiority of the diets of the girls shows the need for care in selection of food especially when the calorie value of the diet is not high. Lack of iron in the diets of girls and women is a matter of serious concern, since the demands for this element may be even greater in the

TABLE 6

Typical Menus Chosen by Girls

BREAKFAST	DINNER	SUPPER
	Light—1666 Calories	
Grapefruit	Baked Sweet Potato Plain Custard Corn Bread (2½)* Butter (2) Milk (½ pt.)	Celery-Tomato Soup Apricots Bread (2) Butter (2) Milk (½ pt.)
	Average—2073 Calories	
Fried Potatoes White Sauce Bread (2) Milk (½ pt.) *Outside* Crackers (6) Fig Cookie (1)	Vigorost Boiled Potatoes Lemon Pie Bread Butter	Corn Flakes Banana Peaches Bread Butter Milk (½ pt.)
	Heavy—2365 Calories	
Wheaties (½) Banana Bread Butter Milk (½ pt.) Cocoa	Vigorost smothered with Onions Baked Lima Beans (½) Sliced Tomatoes Milk (½ pt.)	Scalloped Corn Macaroons (4) Milk (½ pt.) Punch

* Numbers in parentheses indicate the number of servings taken.

female than the male. Considering the losses of iron during the menstrual period, the questionable availability of iron in many of the foods, and the iron losses occasioned by mild infections, the need of a wide margin of safety in this element is at once apparent. According to Rose (2), "One of the ways in which women generally can improve their health and vigor is by maintaining a higher level of hemoglobin than they commonly do."

This study of 29 boys and 23 girls, 14 to 19 years of age, on a lacto-ovo-vegetarian diet, revealed the following as the average daily intakes: for boys, 3126 calories or 48 calories per kilogram body weight, 90 gm. protein or 1.4 gm. per kilogram, 1.44 gm. calcium, 1.95 gm. phosphorus, and 0.0182 gm. iron; for girls, 2017 calories or 35 calories per kilogram body weight, 53 gm. protein or 0.90 gm. per kilogram, 0.79 gm. calcium, 1.01 gm. phosphorus, and 0.0094 gm. iron. A marked difference between the nutritive value of the diets per 100 calories as chosen by the boys and girls was observed; the foods chosen by the girls were lower in calcium, phosphorus, and iron. The greatest deficiency observed as a whole was that of iron in the diet of the girls.

TABLE 7

Typical Menus Chosen by Boys

BREAKFAST	DINNER	SUPPER
	Light—2159 Calories	
Banana Raisin Bran (sugar) Bread Butter Milk (½ pt.)	Vigorost smothered with Onions Baked Lima Beans Potatoes warmed with Milk Celery and Peas Salad Chocolate Cake	White Cherries Cookies (5)*
	Average—3407 Calories	
Bananas (3) Raisin Bran Bread (3) Butter (2) Milk (1 pt.)	Boiled Potatoes Brown Gravy Pinto Beans Cherry Pie Bread (3) Butter (2) Milk (½ pt.)	Hominy and Vigorost (2) Apple Bread (2) Butter (2) Milk (½ pt.)
	Heavy—4130 Calories	
Rolled Oats (sugar) Fig Sauce Banana Krumbles Bread (3) Milk (1 pt.)	Macaroni and Beans Savory Potatoes Buttered Peas Lettuce and Mayonnaise Graham Pudding and Whipped Cream Bread (5) Milk (½ pt.)	Raisin Bran Banana Cottage Cheese Baked Beans Bread (3) Milk (1 pt.)

* Numbers in parentheses indicate the number of servings taken.

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Protein does more than merely furnish fuel and material for replacement. Through its specific dynamic action it has a stimulating effect upon vigor and general physiologic efficiency, which effect, it should be emphasized, is not experienced from that quota of the protein which is merely added to the body; it is only the surplus of protein utilized which exerts its specific dynamic action and gives an effective boost to metabolism. This stimulus which comes from a liberal intake of protein contributes in no small measure to the vigor of the individual and the stamina of the race. Indeed, the prowess and achievements of our early Anglo-Saxon ancestors have been attributed in part to the energy-giving effects of the meat which they consumed in liberal quantities.

The development of races as well as that of individuals may be influenced by the liberality of the intake of protein. Frequent comment, for example, has been made on the improvement in physique over that of their forebears exhibited by American-born children of European immigrants and the physical superiority over their parents of Japanese children born in California. Much of this is attributed to the fact that the diets enjoyed in this country differ from those in other lands chiefly in their higher content of protein. There is ample evidence for believing that peoples develop to greater mental and physical stature under a favorable environment, an important feature of which is the internal environment as determined by the food.

When a long-range view of man's life is taken, it is evident that the terms minimum and optimum, as applied to the protein of the diet, are not synonymous and that the smallest permissible intake is not necessarily the best. If man would enjoy sustained vigor and would experience his normal expectancy, as well as contribute to the improvement of his race, he must eat a liberal quantity of good protein. By liberal is meant an amount well in excess of his theoretic needs, such an amount as the more prosperous races, in their long experience, have instinctively chosen—100 gm. or more daily. By good is meant proteins or protein mixtures which are of high biologic value, in which the proteins of meat, eggs and milk find first place.—*McLester, J. S., Nutrition and Diet in Health and Disease, p. 77, W. B. Saunders Company, 1939.*

A NEW METHOD OF PREPARING BEEF NUTRIENTS[1]

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IN THE diet for invalids, the use of beef juice and scraped beef has been somewhat limited by the time necessary for preparation. A new method for freeing beef nutrients from connective tissue has been developed. Simpler and consequently time-saving, this method is practical in preparing restricted diets in which consistency or roughage must be considered. It uses a new type of electric mixer, which in a very short time cuts a meat and water mixture to a smooth, uniform pulp. Muscle proteins can then be separated from the connective tissue by sieving.

EXPERIMENTAL

The blender used in the experimental work, whirling at the rate of 15,000 revolutions per minute, by cutting and shredding, makes the mixture homogeneous. The cutting blades are of stainless steel, the motor approximately one-fifth horse power. In answer to our question as to whether the motor was strong enough to permit, without excessive wear, daily or constant use in cutting as resistant a substance as beef, the manufacturers tested six machines with 682 hours of continuous operations with similar loads. They stated that they "feel quite confident now that the device will stand up satisfactorily under such conditions."

Preparation of Beef Juice from Pan-broiled Round Steak. Pieces of beef round about one inch thick, freed from visible fat, bone and gristle, and weighing 227 gm., were pan-broiled. Each piece was heated to an internal temperature of 40° C. (104° F.), turned, and then heated to an internal temperature of 55° C. (131° F.). The piece was then cut into cubes. The pan in which the beef had been broiled was rinsed with the 341 gm. water to be used in chopping the beef. This water was then put into the blender, the beef cubes added, the container covered, and the blender allowed to run at high speed for 60 seconds. The mixture was sieved and pressed with a motor-driven roller attachment of an electric mixer until no more liquid could be pressed from it. The residue in the sieve is called the "non-sievable residue" and the material which has passed through the sieve is termed "beef nutrients." There was considerable loss by sieving since not only the connective tissue but also much of the coagulated muscle fiber protein was held back. The non-sievable residue varied from 112 to 176 gm. in the mixtures from pan-broiled beef. The beef nutrients could be served as chilled beef juice or reheated for serving.

Freeing Raw Beef Nutrients of Connective Tissue. After the bone, gristle, and visible fat were removed from the beef round, the meat was cut into three-fourths to one-inch cubes. A weighed amount of water was put into the glass container of the blender, the raw beef cubes were added, and the container covered. The blender was allowed to run at high speed for 60 to 90 seconds. The mixture was then put into the fine

[1] Received for publication July 24, 1939.

sieve attachment of the electric mixer and the motor-driven roller was allowed to run for 10 to 15 minutes. The contents of the sieve seemed to be, for the most part, connective tissue.

In preliminary trials it was found that the maximum amount of beef the blender would chop at one time was 227 gm. (one-half pound). This was the amount used in the experiments. At least as much as 125 gm. of water was needed for the 227 gm. of beef in the container if the cutting action of the blender used was to be such that a uniform pulp resulted. Amounts of water varying from 125 to 341 gm. for each 227 gm. of beef were used, the amount depending upon the use to which the resultant mixture was to be put. As the percentage of water used was increased, the total losses during preparation and straining decreased. With the smaller amount of water there was a tendency for the beef to cling to the cutting knives, and the mixture was so thick that there was more waste in removing it from the container. With the smaller amount of water there was usually more non-sievable residue, as it was forced through the sieve less readily. The non-sievable residue varied from 36 to 70 gm. with an average of 52 gm. in the thirteen samples with the smallest amount of water added. In the ten samples with the largest amount of water added, the non-sievable residue was between 34 and 50 gm. with an average of 40 gm. Thus the percentage of loss during preparation was less when larger amounts of water were used. This loss varied from 23 to 35 per cent with the smaller amount of water and from 12 to 21 per cent with the larger amount.

Following the procedure previously described, tomato juice was used as the liquid in place of water.

Heating of Raw Beef Nutrients for Serving. Heating beef to a temperature of 49° C. (120° F.) is necessary to ensure the destruction of the beef tapeworm.[2] For this reason, methods of preparing the raw beef nutrients for serving are suggested. When the larger proportion of water was used (341 gm. water to 227 gm. beef), a liquid was obtained; but heating this liquid to 50° C. (122° F.) or higher with constant stirring caused coagulation of the meat proteins and changed the consistency to a semi-solid, curdled mass. The curds could be broken up to a considerable extent, however, by returning the mixture to the container of the blender and running it at high speed for thirty seconds. Then, although retaining a certain granular character objectionable to some people, it could be served as a liquid. Heating the mixture to 75°C. (167° F.) rather than to 55° C. (131° F.), gave a liquid of somewhat less viscous consistency, preferred by several tasters to the one heated to a lower temperature. This mixture, although recognized as a mixture of beef juice and water, is called beef juice.

Another method of preparing the raw beef nutrients for serving was used in the mixtures with the smaller proportion of water (125 gm. of water to 227 gm. of beef). The beef nutrients were baked in custard cups in a pan of hot water in a 135° C. (275° F.) oven until internal temperatures varying from 55° C. (131° F.) to 75° C. (167° F.) were reached. For want of a better term, this coagu-

[2] Moulton, R. C.: Meat Through the Microscope, Chicago: University of Chicago Press, 1929.

lated beef nutrient and water mixture is called "beef mold."

Comparisons of Various Preparations Made from Beef Nutrients. Some indication of consumer acceptance and the comparative palatability of beef juice prepared in the ways herein described was obtained by asking nineteen students to taste the juice prepared from pan-broiled meat and that prepared from raw beef heated to 75° C. (167° F.). All preferred the juice made from the pan-broiled beef as they liked its thinner consistency and "browned" meat flavor better. Another group of twenty tasted juices prepared from pan-broiled beef, from raw beef and water, and from raw beef and tomato juice. In the latter two methods of preparation the juice had been heated to 75°C. (167° F.). Twelve preferred the juice with the tomato flavor, seven that from the pan-broiled beef, and only one the juice prepared from the raw beef and water.

Effect of Internal Temperature Upon Characteristics of Beef Mold. The beef mold which had been heated to 55° C. (131° F.) internal temperature during baking had characteristics unlike the ones heated to higher temperatures. Considering flavor, apparent juiciness and tenderness, eight judges preferred the meat heated to a temperature of 60° C. (140° F.). These data are given in table 1.

The penetrometer readings showed that the beef mold cooked to a temperature as high as 65° C. (149° F.) was definitely less tender than that heated to a lower degree and that there was another definite decrease in tenderness between 70° C. (158° F.) and 75° C. (167° F.). The apparent juiciness also was much less at the higher temperatures, possibly because the water was no longer so firmly held by the protein, as is shown by the data on liquid drainage.

Protein Content of Beef Juice and Beef Mold. The protein content of the various foods prepared from beef nutrients was determined. Beef and water in varying proportions were used in the mixtures prepared for analyses. After chopping and sieving, samples were taken from each mixture for duplicate Kjeldahl determinations. Each nitrogen per cent given in table 2 represents the average of six determinations for that type of mixture.

TABLE 1

Comparison of Beef Molds Heated to Different Temperatures

INTERNAL TEMPERATURES	AVERAGE RATING BY 8 JUDGES*			PENETROMETER READINGS 0.1 Mm.	COLOR	LIQUID DRAINAGE FROM 100 GM. SAMPLE AFTER 10 MIN.
	Flavor	Apparent juiciness	Apparent tenderness			
°C.						cc.
55	4.5	5.4	6.5	196	Pink	15
60	5.3	6.4	6.6	184	Pink	18
65	5.5	4.9	5.9	146	Gray pink	21
70	5.5	3.9	5.3	146	Gray pink	26
75	5.4	3.0	4.9	126	Gray	25

* Rating—1 low to 7 high.

The protein in the mixtures made from pan-broiled beef was less than half of that prepared from raw beef. This variation is due to the greater amount of non-sievable residue, containing coagulated muscle fiber proteins, when pan-broiled beef is used.

As would be expected, the percentage of protein in the food varied indirectly with the amount of water added and directly with the percentage of meat in the original mixture. When the pro-

portion was that used in beef mold (125 gm. of water to 227 gm. of beef), the protein averaged 13.56 per cent. When the beef prepared as described here with the protein content of other beef products may be of interest. Such comparisons, as well as the average yields in protein grams per 227 gm. of lean beef round, are given in table 3. Both the different proportions of water used

TABLE 2

Protein in Various Beef Nutrient Preparations Using 227 gm. of Beef

	WATER ADDED	ORIGINAL MIXTURE	NITROGEN IN STRAINED MIXTURE	PROTEIN IN STRAINED MIXTURE	BEEF IN ORIGINAL MIXTURE	FACTOR*	PROTEIN BY CALCULATION	
							Factor .22	Factor .2
	gm.	gm.	%	%	%		%	%
Beef mold	125	352	2.17	13.56	64	.212	14.08	12.8
	180	407	1.92	12.00	56	.214	12.32	11.2
	227	454	1.78	11.13	50	.223	11.00	10.0
Raw beef juice	341	568	1.50	9.38	40	.235	8.80	8.0
Juice from pan-broiled beef	341	568	.71	4.44	40			

* The factor is obtained by dividing the protein in the strained mixture by the meat in the original mixture.

the proportion was that used in beef juice from raw meat, the protein averaged 9.38 per cent.

A formula which will permit the calculation of the approximate percentage of protein in strained raw beef mixtures using different proportions of beef and water is:

$$\text{Approximate Protein \%} = \frac{\text{Grams of beef} \times .22}{\text{Grams of beef} + \text{grams of water}}$$

The factor .22 was obtained by averaging the factor from the 23 Kjeldahl determinations on the strained raw beef mixtures. When using this factor as a basis for calculation in the twelve different raw beef and water mixtures, there is less than 1 per cent variation in the calculated values as compared with the protein values derived from Kjeldahl determinations. Even when .2 is used as the factor there is less than 1½ per cent variation in calculated and Kjeldahl protein values.

Comparisons of the protein content of

TABLE 3

Percentage of Protein in Preparations from Beef Round

	PROTEIN	PROTEIN PER 227 GM. LEAN BEEF
	%	gm.
Beef round, lean, edible portion*	21.3	48.35
Scraped beef, (round) approx.**	20.9	
Beef juice*	4.9	11.12
Beef juice from pan-broiled beef (227 gm. beef to 341 gm. water)	4.44	14.39
Beef juice from raw beef (227 gm. beef to 341 gm. water)	9.38	44.93
Beef mold (227 gm. beef to 125 gm. water)	13.56	32.63

* Rose, M. S.: A Laboratory Handbook for Dietetics, New York: The Macmillan Company, 4th edition, 1937.

** Locke, E. A.: Food Values, New York: D. Appleton and Company, 1911.

and whether the nutrients were extracted from raw or cooked beef influenced the protein content.

Other ways of utilizing the beef nutrients freed from connective tissue as described here can be developed. With the smallest proportion of water to beef, the strained mixture can be used on bread like scraped beef. Seasonings may be varied to make more palatable products.

SUMMARY

A different method of freeing beef nutrients from connective tissue is described. Several ways of preparing these nutrients for use in restricted diets are suggested. Kjeldahl determinations give the approximate percentage of protein in the beef juice and beef mold as varying from 4.44 per cent to 13.56 per cent, depending upon the method of preparation and the proportion of water used.

Food Preparation

Menu making is mighty important, but after all it is the preparation of the food which decides whether or not it will appeal to the consumer. Much may be done to add interest to everyday foods by cutting them differently, by adding snappy sauces and by attractive and interesting garnishes. Do not overdo it. As Ann Batchelder says, "Don't think every baking powder biscuit needs a parasol." Patients' trays may always be garnished attractively and it pays big dividends. A patient said one day to the diet nurse, "You know, I was feeling so blue and discouraged. I wasn't going to eat a thing. And then when my tray came in and I saw it, I thought, 'Well, if she cares enough about me to cut those radishes so pretty, busy as she is, I guess I'd better show her I appreciate it,' and I ate every bit on the tray."—*Geraghty, E. M.: Organization and Management of the Hospital Food Service—Part I, Hospitals, December, 1939.*

On Salads

There are many gastronomic secrets which few women possess. Next to dessert, the salad has been subjected, perhaps, to the most universal perversion. Almost nothing in the whole range of cookery so completely reveals its maker. The common conception is of a trick concoction decked out for a stroll on the board walk; ribbons of vegetables, gew-gaws of nuts and raisins and marshmallows, smeared with mayonnaise and sprinkled with confetti." Through, perhaps, association, I have come to identify such monstrous and synthetic horrors with Maxwell Parish [sic] reproductions—lamp shades with pink roses and tassels, imitation oriental rugs, and other evidences of spurious attempts at grandeur. Now a salad which honors its very name is of another world—preferably one with a variety of green vegetables luxuriously bathing in a dressing of fine olive oil and vinegar—if possible, tarragon vinegar. It is difficult to surpass a plain salad of either endive or romaine, or even home grown lettuce, providing the dressing is right. We are gradually, in America, growing more and more salad material in the way of leeks, celeriac, Witloof chicory and Chinese cabbage. All can be served with dressings to emphasize personal tastes and preferences.—*Armitage, M.: Fit For a King, New York: Longmans, Green & Co., Inc., 1939.*

EDITORIAL

THIAMIN IN FOODS

As has already been indicated in this JOURNAL[1, 2], the term thiamin appears to be the acceptable designation for vitamin B_1, the "antineuritic" or "antiberiberi" vitamin, and is "consistent with attempts to relate the name of a vitamin to the chemistry of the compound involved". The complete chemical structure of vitamin B_1 is now known. Because of its unique characteristic in that it contains sulfur, the name thiamin was proposed to replace vitamin B_1. With the further chemical and physiologic differentiation of the remaining components of the old B complex, now grouped as the B_2 complex, will doubtless come specific terms other than those now known which will designate each factor according to its chemical and physiologic attributes.

Vitamin B_1 (thiamin) is widely distributed in foods of both animal and vegetable nature. Booher and Hartzler in a recent bulletin[3] conclude that, in general, foods derived from plant tissues are not rich sources of thiamin except for the seeds of plants and for yeasts grown in rich media. Interestingly enough, the relatively high proportion of thiamin in seeds appears to be a natural provision for the needs of the plant embryo. Of the animal tissues, the liver, heart and kidneys are known to contain relatively high proportions of thiamin. More recently, muscle tissue, that of pork, has been found to be conspicuously high in thiamin. Booher and Hartzler suggest, in this connection, that while not clearly established there is some experimental evidence to suggest that thiamin and its pyrophosphate may be concerned in the conversion of carbohydrate into fat—a process unusually prominent in the metabolism of fattening swine.

With the availability of crystalline thiamin, possibilities for the study of its physiologic properties have been greatly extended and have facilitated the vitamin B_1 assays of the edible portions of 100 commonly used food items.[3] The vitamin B_1 contents of these foods were evaluated directly in terms of the crystalline thiamin chloride hydrochloride used as a standard of reference in each assay. A comparison of the average weekly weight increments of vitamin B_1 assay rats receiving known quantities of thiamin with those of litter mates receiving known quantities of the food under test was the criterion used in evaluating the vitamin B_1 values.

This rat-growth method of assaying a wide variety of common food items was chosen for reasons of expedience and convenience and the results in general are in fair agreement with those reported by Baker and Wright,[4] using the brady-

[1] Elvehjem, C. A.: The vitamin B complex in practical nutrition, J. Am. Dietet. A., 15: 6, 1939.

[2] Becker, J. E.: Nomenclature and human requirements of the vitamins, J. Am. Dietet. A., 15: 354, 1939.

[3] Booher, L. E., and Hartzler, E. R.: The vitamin B_1 content of foods in terms of crystalline thiamin, Tech. Bull. No. 707, U. S. Dept. of Agriculture, 1939. Price 5 cents on application to the Superintendent of Documents, Washington, D. C.

[4] Baker, A. Z., and Wright, M. D.: The vitamin B_1 content of foods, Biochem. J. 29: 1802–1807, 1935. Ibid., idem, 32: 2156–2161, 1938.

cardia test method, and with other values determined by biologic assay in which the international standard has been used as a reference value.

The specimens of food assayed were bought on the open market and only the edible portions, prepared as for cooking or table use, were subject to analysis. Each assay of a fresh food or dairy product entailed the use of ten or more samples of each item.

The authors conclude: "Although vitamin B_1 is widely distributed in common foodstuffs, certain classes of foods are outstanding with respect to vitamin B_1 values. The most important natural sources for human dietaries are whole-grain cereals, legumes, nuts, and lean pork, both fresh and cured." Even though as much as 50 to 60 per cent of the vitamin is ordinarily destroyed in cooking, cooked lean pork is still an excellent source of this vitamin. Among those foods listed by the authors as "excellent" sources (150 I.U. or more per 100 gm.) are dried Lima beans and cowpeas, "quick cooking" oatmeal, rolled oats, peanut germ, skins and whole raw peanuts, lean fresh pork and smoked ham, and fresh, green and dried soy beans. The authors add, however, that foods listed as fair or poor (from — 30 to 100 I.U. per 100 gm.), such as milk and potatoes, may furnish an appreciable portion of the daily needs if consumed in liberal amounts.

THE FANCIFUL AND THE FACTUAL IN FOOD[1]

Since food is a matter of vital interest to all, it is not surprising that many cling to food prejudices and opinions in a most unreasonable fashion. Most of the "old wives tales" regarding the beneficial effects of certain foods are highly fanciful. But here and there a few grains of truth may be discerned in the welter of misconception.

Generally, the basing of food theories upon limited personal experiences is highly fallacious. Yet there are few who do not feel qualified to dispense advice about diet to all who will listen, on the basis of personal experience or limited observations on relatives and friends. It is difficult indeed to teach people that a person who knows nothing of the intricacies of food chemistry or of the complicated mechanism of the body is unqualified to draw general conclusions from his own personal experience with food.

With the present-day interest in psychology, the average layman might be expected to realize that such factors as the power of suggestion, the influence of fear and the desire to believe, play a very important part in shaping beliefs concerning food. The food faddist, however, ignores these factors. These faddists generally fall into one of the following classes: the earnest souls greatly concerned over the functioning of their bodies, who fall easy prey to the vendors of special systems of diet; those who consider it "advanced" to follow the latest fashion in diet and who are more concerned about keeping up to the minute on ideas than with the truth behind the ideas; and those who limit themselves quite unnecessarily as to the foods they eat, in the mistaken belief that this is essential to their health.

[1] Abstract of a paper by Margery Vaughn, Nutritionist, New York State Department of Health, presented at the Nutrition Conference, New York State College of Home Economics, Ithaca, July 17–22, 1939.

The faddist forgets that all are very much alike physiologically, in spite of each preferring to think himself unique. Peculiar sensitiveness to certain foods which others tolerate well can be due to wrong ideas as well as to the food itself. A few may have definite food idiosyncrasies, but unless one belongs to this unfortunate group, a particular food may cause distress because too much of it is eaten or consumed when digestion is impaired by reason of overfatigue or nervous strain. And the same food may actually produce digestive distress again, even under otherwise favorable circumstances, due to the fear or suggestion that trouble is sure to follow. Almost any food can give difficulty if taken in too large quantities along with other foods hard to digest or under conditions where digestion of all food is poor. Phobias for any type of food and for widely differing food combinations can be developed one after another until there is little left from which to choose.

Many hold firmly entrenched beliefs in the special benefits of certain foods or food combinations, although the hold of such ideas has lessened considerably in recent years. In the middle ages it was thought that eating heart made one courageous and that much meat made one strong but pugnacious. We still hear people present with great assurance such medieval ideas as these: that celery is good for the nerves, tomatoes are a tonic for the liver, or onions will cure a cold. Yet modern science has shown that special foods do not have strictly specific purposes but that all the tissues draw what nutritive elements they need from the common reservoir of the blood-stream.

In addition to the many and diverse ideas held by individuals, we have groups who cling with religious fervor to diet cults built around variations of a few ideas on diet. Among these, the "Nature cults" are perhaps the most enduring and seem to have a special appeal to those inclined to be overconscientious or apprehensive about health. These cultists believe that raw foods are always better than the cooked, that nuts have special curative values, that coarsely milled grains have peculiar abilities to build strong bodies, etc. They ignore the fact that some foods may be better eaten raw while other good foods could not be readily digested unless cooked, that there is certainly no special benefit derived from taking *all* food in the raw state and that a good mixed diet, containing some raw and some cooked foods, is better for the average person. Somewhat related to the nature cults are the vegetarian addicts, many of whom hold that it is wrong to kill animals for food.

Growing out of the nature and vegetarian cults we find the popular pseudoscientific diet cults which are in vogue today. Most of these are based on taboos of certain food combinations. "Scientists" are quoted as having recently discovered that some types of food are incompatible when taken together, forming either dangerous mixtures or the one preventing the digestion of the other. The fad most ardently espoused at the moment, teaches that one should never eat protein-rich foods along with starchy foods. You must never take an egg *and* a cereal for breakfast, and the old favorite, ham sandwich, is strictly taboo. The idea that these combinations form mysterious

poisons, setting off miniature bombs in the stomach, is rather obviously the product of a lurid imagination.

There is another mighty force in the world today which encourages food fads—advertising—"It speaks and the whole world listens". The money spent annually on advertising exceeds a billion dollars and the advertising for foods represents a substantial part. The "eat more" slogans attempt to persuade the public that the special food advocated has some specific attribute which makes it indispensable and justifies crowding other foods out of the diet.

Others, hypnotized by the latest health fad, vitamins, gulp quantities of vitamin pills and capsules to prevent colds, to ward off a long list of dread diseases, and to give themselves "pep", beauty and strength, all without benefit of medical supervision. The family washes with vitamin soap and the children chew vitamin gum.

The food cultist finds it hard to believe that there are very few foods whose place in the diet cannot be taken equally well by other similar foods. In general, the more varied the diet, the more likely it is to safeguard health; and when one food preempts the place of others in the diet as a whole, the diet is in danger of becoming deficient.

Many intelligent persons are misled by plausible but erroneous ideas because they lack a background of understanding. Widespread ignorance of the human body and how it reacts under different circumstances makes the average person vulnerable to false ideas about health. Some of the prevailing misconceptions which the nutritionist must combat are: that aluminum cooking utensils may cause cancer, a thesis without foundation though widely believed; that milk is constipating; and that honey and maple sugar, as natural sugars, are therefore better than cane sugar. While we may enjoy the flavor of honey and maple sugar, they are no better as body fuel than cane sugar.

Another all-prevailing fad is that of "reducing". The plump are always looking for some quicker, easier way of getting rid of surplus fat than the simple one of eating less. A few will consent to go on a diet provided it has the distinction of being sufficiently peculiar—like the potato diet, or the pineapple and lamb chop diet. But such one-sided diets are to be distinctly discouraged, since they do not meet dietary adequacy. Others are swayed by vendors of patent medicines and devices guaranteed to reduce miraculously and without discomfort, such as rubber garments, bath salts, chewing gums and soaps for external use, and salts, tablets, and capsules to be taken internally.

Anyone really interested in reducing should first consult a reliable physician on the cause and combating of overweight. A safe reducing diet must be adequate and well balanced so that the body may continue to function properly as fat is lost. Recent observations have shown that it is difficult to limit food intake while reducing, and still provide for all body needs. Here is an instance in which vitamin concentrates and mineral additions are valuable and the care of a physician and scientific dietary advice essential.

It makes little difference to the food faddist whether the particular dietary cult he follows incorporates a few grains of truth or not. Should he obtain temporary benefit, it may merely be due to

the simpler diet, more regular living and especially through the belief that he will be helped—the "will to health".

As a reaction to all this propaganda, we note two trends evidenced by: those individuals who group all food information as quackery and eat what they wish with indifference, defiance, and possibly relish; and the others who, in trying to follow every food whim, find themselves in a state of mental confusion. The way to a saner and better balanced judgment about diet lies, of course, through factual education. Knowledge casts out fear upon which the food faddist trades. The ideal diet for man, scientists state, is not yet known. No one food is a perfect food, but wise eating consists of selecting foods from as wide a variety as possible and not eating too much.

METHODS OF CONDUCTING MASS STUDIES IN HUMAN NUTRITION

The present interest in and demand for methods of evaluating quantitatively the status of human nutrition has been met by a variety of suggested procedures. A summary and an estimate of the relative merits of these methods as to accuracy, dependability and practicability for mass studies is indeed welcome. Obviously no one group of workers can have tried all methods and there is consequently an unequal emphasis in the discussion dependent upon the experience of the authors. A recent monograph[1] represents one of the earliest attempts to bring together all available methods and the footnote references to the original literature on each procedure are a great convenience. The methods reviewed include: anthropometric and skeletal measurements, ratings for dental status and condition of the soft tissues of the mouth, calculations of slump and measurements of planar contact, measurements of basal metabolism, tests for protein pre-deficiency, hemoglobin determinations and red cell counts, and tests for vitamin A, B, C, and D status.

The choice and application of certain of these methods to mass human studies, as conducted by the authors, and the suitability of different types of tests for specific groups of infants, children and families are discussed. Description of procedures and necessary equipment are supplemented with pertinent illustrations.

Results obtained in the Pennsylvania mass human nutrition studies, reports of which have been or will be published in detail elsewhere, are summarized. The authors state in conclusion:

> The various studies described herein are being continued in the belief that information of great value is being obtained which is helpful in setting dietary standards for family groups and for growing children. It is believed that information obtained by the procedures described will be valuable in the classroom, in the adult study group, and in the home in planning dietaries which will insure optimum nutritional well-being.

A revision of this monograph a few years hence will undoubtedly show remarkable progress in methods of attacking the human nutrition problem in other than a subjective or trial and error fashion.

[1] Mack, P. B., and Smith, J. M.: Methods of Conducting Mass Studies in Human Nutrition, Pennsylvania State College, State College, Pa., 1939.

CURRENT COMMENT

TRAINING HOSPITAL DIETITIANS

WARREN P. MORRILL, M.D.

The hospital dietitian is primarily an administrative officer. She is responsible for about one-fourth of the total expenditures of the hospital and for that reason the hospital administrator should be more interested in the effectiveness with which she manages her department than in the salary it is necessary to pay to secure and retain a fully qualified person.

For many years the dietitian was, and in too many cases still is regarded as what might be called a therapeutic adjunct rather than a responsible administrator. Her duties were largely limited to therapeutic diets. She had little or no responsibility for the buying of food. Her control of her staff was indirect and therefore not always effective. She lacked personnel and facilities for the maintenance of proper records.

The World War experience opened the eyes of many physicians to the value of sound organization. The departure of the flush days of the twenties forced hospitals to pull their belts tighter and in seeking places to economize, the dietary department as the most expensive single department in the hospital was the first to attract attention. Administrators soon discovered that this department was responsible for more than one-third of the total expenditure for supplies. As they went further into the question they also discovered that there was far more economy possible in the skilful use of food supplies after delivery than in the method of buying.

These conditions led automatically to the demand for administrative dietitians and in turn to the discovery that there was a very small supply available. Schools of home economics were teaching the chemistry and preparation of foods, their therapeutic values in disease and similar basic principles but there existed no generally approved method of teaching the application of these sciences and principles to practical food department administration. Those graduates who later developed as successful administrators of dietary departments in the hospital either just happened to have native administrative ability or like the doctor of two generations back, qualified by "years of experience". A few of the schools developed methods of securing practical training in dietary administration here and there at least as early as fifteen years ago; and within the last twelve years the American Dietetic Association has set up standards for such training and since 1933 has assumed some responsibility, through bienneal inspection, for the content of courses in institutions in which such training is given.

The principles which have been found to underlie the sound hospital training of graduates in medicine apply with equal force to internships for dietitians. The internship is in effect a systematic apprenticeship or preceptorship. The final results of such training will depend far less on the physical size and equipment of the institution than on the teaching qualifications of the permanent dietetic staff.

The failure to give to the dietitian her

proper place in the hospital team is generally due to a mistaken sense of economy. The administrator spends a good share of his waking hours dodging red ink and is therefore hesitant in adding to his executive payroll. What he fails to realize is that the dietitian is responsible for approximately one-fourth of the hospital's expenditures and that the dietary department therefore offers the largest single opportunity for economy. But economy and good service are not secured by simple fiat or rigid adherence to some preconceived formula. Brains applied to every detail of the daily administration of the department supply the only logical answer to the problem. And it is to the dietitian that the administrator must turn for the brain trained to the problem.

The army is the oldest group organized for maximum effectiveness and one of the maxims of army organization is that the higher we progress in the chain of supervision the less the number of subordinates that can be actively controlled by a single individual. The corporal supervises seven privates, the colonel but three or four battalion commanders and the brigadier but two colonels. And a dietary department requires the same on-the-spot and on-the-minute supervision as an army.

That this is true in practice as well as in theory has been demonstrated repeatedly by those who have been sufficiently convinced to try it. One 400-bed hospital increased its number of dietitians from two to four and reduced its raw food cost by two cents per meal, or $1,200.00 per month. A Boston hospital by increasing its supervision over floor service found after six months that it had reduced its edible food waste from 8.6 to 2.5 oz. per patient per day and had reduced ward demands for such items as butter, bread, lemons, milk, ice cream, and so on, from 12 per cent in some cases to as much as 45 per cent in others. A third hospital (200-bed) reports that an increase from one dietitian to four and a salary raise to the labor grade of employee sufficient to decrease labor turnover (average $1.00 per week) was followed by an increase of five cents per person per day in payroll and a decrease of twelve cents per day in raw food costs—a net saving of seven cents per person per day or about $700.00 per month. It is thus apparent that adequate and skilled supervision more than pays its way. But it must be skilled and, while practice alone may not always produce skill, there yet has been no method devised which will produce skill without practice.

The basic course in dietetics is in the basic sciences and their application on a laboratory basis. No school has yet designed a course in the management of a sulky maid, a temperamental chef, a bull-headed butcher, a slick salesman or a "picky" patient. If the hospital is to have dietitians capable of meeting the everyday practical problems of dietetic management it must train them itself. And it is the dietetic internship which solves the problem just as it is the medical internship that makes doctors out of recently graduated medical students.

It has been demonstrated that the adequate graduate staff is an economy rather than an expense and an adequate graduate staff provides the personnel needed for the proper training of the intern. There has as yet been no standard program formulated but it is

assumed that such a program should be predominantly practical and on an apprenticeship basis. This experience should be supplemented by a small but well balanced program of didactic and conference instruction. As a suggestion, one program which was very successful in a 200-bed hospital may be outlined. Duties assigned the chief and three assistant dietitians were as follows:

Chief Dietitian: General supervision; direct control of all supplies, including purchase of perishables, general planning of menus; instruction of interns.

First Assistant: Charge of main kitchen and its personnel, patients' diets (except special diets) and personnel, including personnel dining rooms, dispatch to serving stations, and disposal of garbage.

Second Assistant: In charge of floor service, including floor serving stations and serving personnel. Duties include daily conferences with patients, conferences with doctors as to patients' dietetic problems, education of patients as to diet after discharge.

Third Assistant: Special diets, including computation, preparation and dispatch, and control of personnel in special diet service.

Intern training was carried out by the assignment of one intern to each graduate, the interns devoting three months to each service as assistant and understudy to the dietitian in charge. Assignments were in the following order: special diets, floor service, general kitchen, chief dietitian's office. Hours of duty were so staggered that either the dietitian or her intern was on duty at all times. Normal schedule placed both on duty for the forenoon period and either one or the other for the afternoon or other off-duty period. This arrangement gave the intern close contact with her preceptor but still left her in sole charge each alternate afternoon and alternate week-end to develop her ability to think and act on her own initiative.

The net result from the dietitians' standpoint was more than satisfactory. After a comparatively short service the assistants either were ready for independent positions in other or smaller institutions or, following Samantha Allen's advice, had "found their way to a man's heart through his stomach". For these vacancies the intern service provided a replacement as well as a source of assistants for other institutions.

The number of dietitians who can be trained under such a plan is, of course, somewhat problematical but experience leads to the belief that any hospital can make sound use of a graduate assistant for each 75 beds after the first 50, and that there should be one intern for each staff dietitian.

It is certain that this plan is economically sound and it is believed to be just as sound educationally. From the patient's standpoint it is a very distinct advantage. The opportunity to have their dietetic troubles solved by a graduate dietitian is always appreciated by the patient and after a little experience with the system the majority of the physicians are quite as appreciative of the service as are the patients.

GELATIN AND MUSCULAR FATIGUE

MYER GLICKSTEIN

A series of current advertisements relating the merits of gelatin as a food

which increases one's energy and reduces fatigue has stimulated interest among both laymen and nutritionists. Such advertising has no doubt come about because of recent scientific research findings. For some time it has been known that with the ingestion of a relatively large amount of some creatine precursor which in turn increases the phosphocreatine in the musculature, one should be able to increase muscular ability and allay the tendency to fatigue. These findings seem to be in accord with the current concept of the chemistry of muscular contraction wherein creatine in its combination with phosphoric acid plays an important rôle. A review of the literature on the subject indicates a rather general agreement among investigators that the human adult male is the only one of the species who can store an excess of creatine, whereas the condition of creatinuria is rather prevalent among females and children of both sexes.

Although confirmatory results are lacking at the present writing, Ray and his associates[1] have shown that in males the ingestion of gelatin, a protein which is rich in glycine (25 per cent) and a creatine precursor, has resulted in increased outputs of work as high as 240 per cent above their training levels before fatigue set in, as compared to the pre-gelatin work level. These studies represent work which has been fairly well controlled and are, in all probability, the first reported quantitative experiments conducted with a bicycle ergometer of special design. Similar experiments on women subjects have shown definitely that an increased gelatin intake does not result in an increased work output or a significant reduction in the onset of fatigue. Scientific experiments, therefore, have not confirmed certain claims that women are aided in their work by gelatin. Rose *et al.*[2] for example, have shown that there is a marked sexual variation in the ability to store creatine.

Other workers[3–6] have been able to demonstrate the effectiveness of glycine or gelatin as possible therapeutic agents in cases of muscular dystrophy, notably myasthenia gravis.

Before widespread claims of specific properties in a food such as gelatin are made by advertisers, there are considerations to be borne in mind. There is a danger of overemphasis in respect to gelatin as being an all important "fatigue inhibiting food". The amounts of gelatin ordinarily used in our daily diets as such are quite limited and the fact that glycine can be synthesized in the body and is present in most common proteins is perhaps sufficient reason for not em-

[1] Ray, G. B., Johnson, J. R., and Taylor, M. M.: Effect of gelatin on muscular fatigue, Proc. Soc. Exper. Biol. & Med. 40: 157–161, 1939.

[2] Rose, W. C., Ellis, R. H., and Helming, O. C.: The transformation creatine—into creatinine by the male and female human organism, J. Biol. Chem. 77: 171, 1928.

[3] Brand, E., Harris, M. M., Sandberg, M., and Ringer, A. I.: Studies on the origin of creatine, Am. J. Physiol. 90: 296, 1929.

[4] Thomas, K., Milhorat, A. T., and Techner, F.: Significance of creatine in progressive muscular dystrophy, and treatment of this disease with glycine, Proc. Soc. Exper. Biol. & Med. 29: 609, 1932.

[5] Taylor, F. R.: A new treatment for myasthenia gravis, Southern Med. Surg. 94: 790, 1932.

[6] Stone, L., and Abeles, M.: The treatment of muscular dystrophy with gelatin, J. Nerv. Ment. Dis. 80: 285, 1934.

phasizing too greatly the significance of gelatin as a "preserver" of muscular strength. Moreover, at no time should it ever be construed that gelatin should replace or displace other proteins in the diet. The possibly detrimental effects of increasing the glycine intake are still unknown. Already it has been shown that the ingestion of large amounts of glycine, as such, results in discomfort and distress. Taxing the body with large doses of any food or drug substance, while the consequences of overuse are still unknown, should be looked upon with considerable disfavor.

TRAINING SCHOOLS FOR ARMY COOKS

T. EDWEENA McCAFFARY

A project which might prove interesting to dietitians in other parts of the country has been undertaken by the local home economics associations both in Calgary and Edmonton, Canada. It is a training school for army cooks. The course consists of ten weeks of lectures with laboratory work. The lectures are given three evenings a week from 7.00 to 9.30 p.m. by volunteer teachers and dietitians—each person taking three lectures or a period of one week. Two members instruct each class. One lectures and the other, a dietitian, teaches large quantity cookery and assists in the supervision of other practical work.

Sixteen men were enrolled for the first class, a few of whom had had previous cooking experience. During the ten weeks' period of lectures three field trips are made—the first to a dairy and the second to a meat packing plant (where demonstrations of the butchering of beef, veal, mutton and pork are given). The butchering demonstration is followed by the actual butchering of the army's meat supply at the barracks the day after. The third field trip is to a bakery where arrangements are made to see the complete process of bread making.

The course was planned to include the method of preparation of all foods included in the army ration plus milk and egg dishes. The lecture period is accompanied by individual laboratory work. For practical experience in large quantity work the men are divided into groups of two and four and sent to kitchens where large quantity work is done under the supervision of a dietitian for approximately two weeks following the lecture course. The men are treated as regular employees and required to do a full day's work. The regular chefs and cooks in institutions where the men receive instructions have offered every possible assistance and the students devote the two weeks to intensive work in these institutions.

Class room space is provided by the Technical School. Money for the purchase of perishable supplies has been provided by the Imperial Order of the Daughters of the Empire (Fort Brisboise Chapter). The institutions are taking the men with no charge for room, board, etc. The Hudson's Bay Company has provided cooking aprons for the men and other commercial concerns have been very anxious to give any help in their power.

The project has been undertaken in the hope that it might point the way to the establishment of regular schools for army cooks. We feel that the health

and contentment of the troops depend largely on the quality of the cooking for their mess. Resistance to disease can be built up by feeding the troops well while they are in camps and barracks so that when cooking must be done under difficulties the men will have stored a reserve of essential food nutrients to carry them over the period when their diet will necessarily be limited. Another long view of the advantages of this project is that these men will be taught a new occupation which they may follow in times of peace.

Give the dietitian a budget and then hold her for results. Let her give Thomas $10 more per month if she thinks he is worth it. It is the individual who is working for the hospital and not the position number. She will watch your money carefully, and, after all, what you want is results, not details. The same holds true with the supplies and repairs. Let her have that extra refrigerator if she has saved the money to buy it. If your dietitian is even average, she will respond to this system like a race horse. She knows she may have anything reasonable in food just so she does not exceed her budget. She will carefully analyze the cost of operating her kitchen and all other units. She will find that Susie, the maid on Ward H, does not waste butter and cream, that she is careful with equipment, glasses and dishes. The butter and cream bill for this floor is $15 per month less than any other floor of equal type and number of patients. The bill for repairs and replacement is $10 less per month. So she gives Susie a raise of $10 per month. Susie is happy—"That's a fine place to work"—and the hospital has money to spend usefully instead of careless personnel wasting it.—*Geraghty, E. M., Organization and management of the hospital food service—Part II, Hospitals, January, 1940.*

In 24 A.D., diet evidently had some importance in treatment of the teeth, for Aurelius Cornelius Celsus, in writing "Of the Toothache," gave the following directions: "A rough tooth ought to be scraped, where it is black, and rubbed with the powder of rose leaves, with an addition of myrrh; and pure wine must be held in the mouth frequently. And in this case the head must be covered, the patient must walk much, make use of friction of his head, and a diet not acrid."—*De Re Medica, Book VI, Chapter IV.*

BOOK REVIEWS

"Fit For a King": The Merle Armitage Book of Food. Edited by Ramiel McGehee. Drawings by Elise. New York: Longmans, Green & Co., Inc., 1939, pp. 258. Price $5.00.

All those to whom eating is a pleasure as well as a necessity, and those who relish little ventures into the exotic, the entrancing, as well as the robust in food, will welcome this book. For instance, it offers a pleasing vista ranging from truffles in champagne to strawberries Romanoff, pressed duck and *Selianka* in casserole—the last a magnificent mixture of sauerkraut, apples, sturgeon, dill pickles and mushrooms, offered by the late Feodor Chaliapin, whose feats in eating were matched only by his voice.

The book is charming in format and in content, and very properly has been dedicated to the advancement of the culinary art and its finer appreciation. Interspersed are little essays on food and eating contributed by Louis Untermeyer, Merle Armitage, Bob Davis, Crosby Gaige, Abbé Ernest Dimnet, Julian Street, Murdock Pemberton, Roy Alciatore, Chef Diat of the Ritz-Carlton Hotel, and others. An outline of wine accompaniments is included.

The more than 700 recipes represent the more select food concoctions that have attained a time honored place among those who enjoy good food. The artistic typography, sketches and photographs, all suitably embellish this—the editors' latest addition to their publications on the arts—one on the art of cookery.

Accepted Foods and Their Nutritional Significance. A publication of the Council on Foods of the American Medical Association. Chicago: American Medical Association, 1939, pp. 512. Price $2.00.

This is an invaluable reference book for the dietitian and nutritionist. It covers the history, purpose and scope of the Council on Foods and its policies regarding fabricated foods. Full details are included regarding the procedure for the manufacturer's submission of foods for approval. Conversion factors for the vitamins, their accepted nomenclature and factors for converting the percentage of nitrogen into percentage of protein, are other helpful features.

Of particular interest is the section relating to food advertising in which examples are given of the many vague and inaccurate claims and misuse of terms, now widespread. Popular examples of "trick advertising" and the use of vague and misleading terms as "energy", "blood building", "resistance", "adequate", "balanced", and "healthful", are given.

Sections follow on the various types of foods, including fats and oils, fruit juices, canned fruits and grain products, infant foods, meat, fish and sea foods, milk and milk products, foods for special dietetic purposes, and so on.

It is impossible within the space of this review to mention all the separate features of interest, for the book is much more than merely an account of the work of the Council on Food and its policies. For example, under rice we find a summary of its sources, manufacture and terms used, and its nutritional value, while under cheese are listed the several varieties and other data that could be used not only for reference but for teaching purposes. The same applies to many other types of food mentioned. A long list of manufacturers and distributors of foods is appended and a general index included.

The New York Hospital Handbook of Applied Nutrition. 1939, pp. 136. Price $2.00, upon application to the Secretary, Dept. of Nutrition, New York Hospital.

This is a most detailed compilation of diets in which more than 70 general and specific dietary procedures are included. Among the unusual features not generally found in handbooks of this type are, for example, extensive gastric routine diets, routine for premature infants, dry diet for obstetrical patients and a number of high and low protein diets of varying caloric value.

Included is a summary of the adequate diet, also test procedures, daily vitamin requirements, the vitamin content of foods, average percentage composition of single foods and approximate percentage composition of combined foods.

The diets have been compiled by the Department of Nutrition under the direction of S. Margaret Gillam and with the cooperation of the staffs of the Departments of Medicine, Surgery, Urology, Obstetrics and Gynecology, and Pediatrics. The book may be unquestion-

ably recommended as a reliable source of information.

Vitamin D: Chemistry, Physiology, Pharmacology, Pathology, Experimental and Clinical Investigations. By C. I. Reed, Ph.D., H. C. Struck, Ph.D., and I. E. Steck, M.D. Chicago: The University of Chicago Press, 1939, pp. 389. Price $4.50.

This book, which is easy to understand and easy to read, is written with the intention of presenting, not only in an interesting manner, but in simple terms, some of the more complex functions and actions of vitamin D in the body. It is a complete review of the latest conceptions, deductions and conclusions concerning vitamin D, written by those well qualified. Dr. Reed, associate professor in physiology at the University of Chicago, has been co-author of at least a dozen authoritative publications on the subject of vitamin D therapy and its effects in the past few years. Dr. Struck, associate in physiology at the University of Chicago, and Dr. Steck, instructor in physiology and medicine, have also published many articles on their own investigations and results concerning vitamin D and its effects on arthritis, parahormone, and basal metabolism.

In a single volume are compiled the miscellaneous results of thousands of investigators in the field of vitamin D research, concerning its chemistry, various forms and their potency, methods of assay, toxic limits of excessive dosage, effects on the blood constituents, and physiological functions in the body. Each chapter has a thorough review of the literature dealing with the particular phase of the discussion. The authors present the results of investigations both pro and con with regard to disputable points and frequently give their own opinions and conclusions, yet in such a way that one need not be biased by their deductions but can form independent opinions. At times the authors discuss moot questions concerning vitamin D, and do not hesitate to admit that such questions must remain unsettled until further investigations have been made.

The chapters on the physiology of vitamin D, effect on blood constituents and toxic effects, are probably the most interesting, as well as important and have been treated as such by the authors. In the chapter on the physiology of vitamin D, the effect of fatty acids on vitamin D, irradiated vs. fortified products, and the influence of vitamin D on calcium and phosphorus assimilation are considered. The chapter on the toxic effects of the vitamin clearly shows the toxic limits, discusses varying thresholds of vitamin D toxicity under different conditions, and gives instances of vitamin D therapy for various diseases.

In short, this book will be of particular value as a reference for all persons interested in the subject of vitamin D, since almost any question that arises concerning this is answered or at least a reference to the literature is included. It will therefore be a valued addition to the library of nutritionists, doctors, and food technologists in general.—CARL F. DUNKER, PH.D., *Massachusetts State College, Amherst.*

Food Values of Portions Commonly Used. By Anna dePlanter Bowes. Second edition. Philadelphia: College Offset Press, 1939, pp. 31. Available from the author at Philadelphia Child Health Society, 311 South Juniper Street, Philadelphia. Price $1.00.

This second edition has been completely rewritten and enlarged by Mrs. Bowes. The chief changes and additions include: an increase in the number of foods listed in each group; new data on protein, fat, carbohydrate and caloric values; the expression of vitamin values changed to international units for vitamins A and B_1, and milligrams for ascorbic acid and riboflavin; the addition of data on fiber content; a brief summary of the effect on food values of various methods of cooking and preserving; and a summary of tentative dietary requirements at various ages.

The plan and arrangement of the book provide quick and easy reference for students of medicine, dentistry and nursing and for practicing physicians, dietitians and nurses. It may be recommended as an accurate and useful source of figures for dietary compilations.

CURRENT LITERATURE

American Journal of Digestive Diseases

Vol. 6, December 1939

*The use of pectin-agar mixtures in diarrhea. G. W. Kutscher and A. Blumberg.—p. 717.

USE OF PECTIN-AGAR MIXTURES IN DIARRHEA. Thirty-two cases of diarrhea were successfully treated with high caloric feedings consisting of whole milk, pectin, agar, and "Dextri-Maltose". Comparison was made with a second group of 16 infants receiving identical formulae save for the added carbohydrate. The addition of pectin, agar, and "Dextri-Maltose" to whole milk formulae is a safe, efficient, and satisfactory treatment.

American Journal of Diseases of Children

Vol. 58, December 1939

*Factors affecting the retention of nitrogen and calcium in a period of growth. II. Effect of thyroid on calcium retention. J. A. Johnston and J. W. Maroney.—p. 1186.

*The play-interview: A method of studying children's attitudes. J. H. Conn.—p. 1199.

The Fröhlich syndrome. H. Bruch.—p. 1282.

THYROID AND CALCIUM RETENTION. In the period of growth thyroid in doses small enough so that the basal metabolism is not stimulated beyond normal increases the retention of calcium. Beyond this point retention is diminished.

PLAY-INTERVIEW. A method has been described of working directly with the child through the medium of play-interviews. The child learns to express his feelings and thoughts through the medium of dolls. Clinical material indicates that the attitudes, motives and imaginations of the child are closely associated with his life situation and actual experiences.

American Journal of Physiology

Vol. 128, December 1939

*New results on the absorption of insulin from the alimentary tract. L. E. Young, W. A. Phillips and J. R. Murlin.—p. 81.

*The importance of vitamin B_6 and factor W in the nutrition of dogs. J. M. McKibbin, R. J. Madden, S. Black and C. A. Elvehjem.—p. 102.

ABSORPTION OF INSULIN. Nearly 300 experiments on dogs have confirmed the favoring effect of hexylresorcinol in alkaline solution on the absorption of insulin from the alimentary tract. The optimum *p*H range of the intragastric mixture for maximum effect is from 9.9 to 10.5.

VITAMIN B_6 AND FACTOR W. Dogs may be raised successfully on a highly purified or synthetic vitamin B complex-free ration when properly supplemented. In addition to thiamin, riboflavin and nicotinic acid, the dog also requires vitamin B_6 and a filtrate factor which may be identical with factor W. The rôle of the chick antidermatitis factor in the nutrition of the dog is still not clear but preliminary evidence indicates that quantitatively it may also be needed by the dog.

American Journal of Public Health

Vol. 29, December 1939

*Public health aspects of the Federal Food, Drug, and Cosmetic Act. W. S. Frisbie.—p. 1292.

*Food poisoning due to staphylococci: With special reference to staphylococcus agglutination by normal horse serum. G. G. Slocum and B. A. Linden.—p. 1326.

*Advances in thiamin research. A. Arnold, F. D. Baird and C. A. Elvehjem.—p. 1334.

FOOD, DRUG, AND COSMETIC ACT. A food is adulterated if it bears or contains any poisonous or deleterious substance which may render it injurious to health. Naturally dangerous food is prohibited. Foods for special dietary purposes or those bearing vitamin claims must be adequately labeled to inform the purchaser as to their value for the uses claimed. Only harmless and certified coal-tar colors may be used. Artificial colors, artificial flavors, and permitted chemical preservatives are required to be so declared on the label. Even in its imperfect condition the act of 1938 represents a substantial measure of protection to health.

FOOD POISONING. The occurrence of 20 outbreaks of food poisoning apparently due to staphylococci, all of which followed the consumption of "ready to eat" ham and related salt-cured meat products, is discussed.

THIAMIN RESEARCH. The physiological rôle of thiamin in the body has been shown to be asso-

ciated with the metabolism of pyruvic acid and related keto acids, intermediates in glycolysis. The daily requirement for all species is approximately 1 p.p.m. of low fat dietary solids. This requirement is decreased in the presence of increased amounts of fat in the diet. The body is unable to store appreciable amounts of thiamin. Studies on the dietaries of middle class families in England and similar groups in this country have indicated the daily thiamin intake is close to the borderline requirement level.

Annals of Internal Medicine

Vol. 13, December 1939

*The influence of vitamin deficiencies on other diseases. J. B. Youmans.—p. 980.

VITAMIN DEFICIENCIES. There is little reliable scientific evidence of the effect of vitamin deficiencies on disease and little justification for the current widespread use of vitamins as therapeutic agents in a number of illnesses. Vitamin deficiencies do occur as complications of many diseases and modify unfavorably their course and outcome. With the present rapid development of methods for determining the existence of specific deficiencies of a mild character their effect on various diseases will be determined.

Archives of Internal Medicine

Vol. 64, December 1939

*Biophotometer test as an index of nutritional status for vitamin A. G. Steininger and L. J. Roberts.—p. 1170.

*Infantilism in ulcerative colitis. S. Davidson.—p. 1187.

*Physiologic basis of intravenous dextrose therapy for diseases of the liver. S. Soskin and M. Hyman.—p. 1265.

BIOPHOTOMETER TEST. Results of over 2000 biophotometer tests on 459 persons were analyzed to determine the reliability of the test and its validity as a measure of the nutritional status for vitamin A. Single tests on a subject were unreliable. For children from a high socio-economic level, the biophotometer readings were significantly higher than for children from a low level. Although some relation exists between the biophotometer readings and vitamin A nutrition, the relation is not close enough to warrant the use of the test as a means of diagnosing subclinical vitamin A deficiency.

ULCERATIVE COLITIS. Three cases of infantilism associated with chronic ulcerative colitis are presented. The processes of nutritional deficiencies in the chronic diarrheas are pointed out, and their rôle in the production of secondary infantilism discussed.

DEXTROSE FOR LIVER DAMAGE. A damaged liver contains little glycogen. Animals fed carbohydrate are generally less susceptible to any drug which produces accumulations of fat in the liver. After such poisoning the feeding of dextrose aids recovery of the animal. Acute and chronic destructive or degenerative processes of the hepatic parenchyma are best treated with large amounts of carbohydrate.

Archives of Pediatrics

Vol. 56, December 1939

*Avitaminosis without dietetic deficiency. F. van der Bogert.—p. 761.

*Tall youngsters. I. Bram.—p. 803.

AVITAMINOSIS. The tendency in nutrition has been to supply plenty of the essential elements, expecting them to fulfil their functions, with little consideration for their utilization in the body. Children rarely starve to death because food is not available but many have been killed or wounded by overfeeding. A case of avitaminosis due to overfeeding is presented.

TALL CHILDREN. Man's destiny and future history depend largely upon his dietary habits. The national traits of the English, the Hindus, the Japanese and the Eskimos are influenced by their respective dietary habits. During the past 2 or 3 decades, the appearance, in families of average height, of unusually tall boys and girls has been steadily increasing. Continued enlightenment of the public on the scientific facts of hygiene and dietetics is laudable, for with the tendency to augmented height in a large percentage of the coming generations improved health, greater efficiency and increased longevity result.

Canadian Medical Association Journal

Vol. 41, December 1939

*Complications of diabetes mellitus with special reference to cause and prevention. A. A. Fletcher and J. W. Graham.—p. 566.

DIABETES MELLITUS. A diet complete in all essential food elements should be offered in

amounts adequate for maintenance of health and efficiency to those with diabetes. Fifty to 75 gm. of protein of good biological value may be given in the form of meat, fish, fowl, eggs and milk. The remaining caloric requirement can be made up of carbohydrate and fat. No extremes of balance are necessary. Diets which contain equal amounts of carbohydrate and fat by weight lend themselves readily to control without undue demand of insulin. Total calories should be based on the build, activity, and sex of the patient rather than on his weight. The provision of a satisfying diet offers the best guarantee of the patient's adherence to his program. Weighed diets in the long run give best results.

Child

Vol. 4, December 1939

*Some brighter aspects of the child-welfare picture. F. Perkins.—p. 143.

CHILD-WELFARE PICTURE. In such a time as the present the needs of childhood require particular attention. Despite international problems, the responsibility for meeting the continuing needs of children must be accepted. More mothers survive today to make homes for their children. A significant saving of infant life is also reported. The effects of work in the field of maternal and child health are cumulative, and many groups, agencies, and influences have helped to bring about these achievements. The benefits of the maternal and child-welfare provisions of the Social Security Act are now to be extended to Puerto Rico. Progress in the field of child labor administration has been made.

Hygeia

Vol. 17, December 1939

*What about meat? Editorial.—p. 1062.
*The story of food: II. From cereals to vegetables. E. F. Kohman.—p. 1095.
*Vitamin D milk.—p. 1119.
Secrets from a Dixie kitchen. H. A. Koch.—p. 1123.

MEAT. The per capita consumption of meats in the United States is approximately 133 lb. per person per year, which includes all sorts of meat cuts, muscular organs and nonmuscular organs of cattle, sheep and hogs. It does not include the smaller animals used from time to time, nor does it include fish. In Montreal the consumption of meat is 144 pounds per person per year. There is good evidence that people might live on an almost exclusive meat diet with a fair degree of success, as far as nutrition is concerned. Meat is a desirable component of the diet, being a good source of iron and an excellent source of thiamin and riboflavin. The sanitary control of fresh and canned meat under the Bureau of Animal Industry of the United States Department of Agriculture is excellent. It assures a high quality of all materials sold in interstate commerce.

STORY OF FOOD. When compared with 15 fruits, 15 of the most popular vegetables are 2.1 times as rich in calcium, 1.7 times as rich in iron, 3 times as rich in carbohydrate and 0.9 times as rich in calories. Vitamins are the products of plant cell synthesis, and succulent vegetables represent rapidly growing plant tissue; fruits are more in the nature of plant storage material. The adoption of more vegetables for their mineral and vitamin content to replace that lost in milling cereals and refining of other foods is entirely logical.

VITAMIN D MILK. Although vitamin D is needed throughout life, the requirement is greatest during infancy, pregnancy, and the nursing period. Infants usually are given from 800 to 1000 U.S.P. units of vitamin D daily. For pregnant and nursing women a minimum daily intake of 340 U.S.P. units has been suggested. Only a few common foods contain vitamin D in significant quantities, namely egg yolk and the flesh of certain oily fish, such as salmon, tuna and sardines. The Council on Foods of the American Medical Association has considered that the fortification of milk with vitamin D is in the best interests of the public. Vitamin D properties may be imparted to milk by the direct addition of either natural or manufactured vitamin D concentrates, by irradiation of milk or by proper feeding of vitamin D preparations to cows.

Journal of Biological Chemistry

Vol. 131, December 1939

*Vitamin E activity of alpha-tocoquinone. O. H. Emerson, G. A. Emerson and H. M. Evans.—p. 409.
*Choline metabolism. I. The occurrence and prevention of hemorrhagic degeneration in young rats on a low choline diet. W. H. Griffith and N. J. Wade.—p. 567.

*A fluorometric method for determining the riboflavin content of foodstuffs. A. Z. Hodson and L. C. Norris.—p. 621.

ALPHA-TOCOQUINONE. Alpha-tocoquinone possesses vitamin E potency which is substantially identical with that of alpha-tocopherol.

CHOLINE METABOLISM. A new effect of a deficiency of choline in young rats is characterized by an extreme toxic state in which there is a marked hemorrhagic enlargement and degeneration of the kidneys, a regression of the thymus, and an enlargement of the spleen. The deficiency is prevented by amounts of choline too small to influence the deposition of liver fat. The requirement for choline is greater in young than in older rats. Choline may be essential for the maintenance of the normal structure of tissues as well as for its lipotropic action.

RIBOFLAVIN. A fluorometric method for determining the riboflavin content of foodstuffs is presented. Results secured by the method on a number of samples of foodstuffs are compared with results secured by the micro-biological method of Snell and Strong and good agreement is shown.

Journal of the American Medical Association

Vol. 113, December 2, 1939

*Nonsurgical aspects of the kidney stone problem. F. Albright, H. W. Sulkowitch and R. Chute.—p. 2049.
*Supplementary report on vitamin K. A. M. Snell and H. R. Butt.—p. 2056.
*Heredity in infectious diseases. Editorial.—p. 2060.

Vol. 113, December 9, 1939

*Some clinical neurologic aspects of vitamin B deficiencies. C. D. Aring, J. P. Evans and T. D. Spies.—p. 2105.
*Avitaminosis occurring in diabetic patients under insulin therapy. V. P. Sydenstricker, L. E. Geeslin and J. W. Weaver.—p. 2137.
*The need for the addition of vitamin B_1 to staple American foods. G. R. Cowgill.—p. 2146.
*Industrial utilization of dairy products.—p. 2153.

Vol. 113, December 16, 1939

*Control of prothrombin deficiency in obstructive jaundice by use of vitamin K. J. D. Stewart and G. M. Rourke.—p. 2223.
*The new federal Food, Drug and Cosmetic Act. T. G. Klumpp.—p. 2233.

Vol. 113, December 23, 1939

*Botulism: Demonstration of toxin in blood and tissues. H. J. Schneider and R. Fisk.—p. 2299.
Two related outbreaks of food poisoning attributed to a Salmonella organism. D. H. Andrew, F. A. Korff and C. L. Ewing.—p. 2300.
*The pituitary gland and water diuresis. Editorial.—p. 2322.

Vol. 113, December 30, 1939

*Recent advances in the medical treatment of peripheral vascular disease. E. V. Allen.—p. 2375.
*Vitamin A in the blood of normal adults. G. Steininger, L. J. Roberts and S. Brenner.—p. 2381.
*Hyperparathyroidism and pregnancy. C. L. Spingam and S. H. Geist.—p. 2387.
Physiology of the biliary tract. A. C. Ivy and L. Goldman.—p. 2413.

KIDNEY STONES. Cystine and calcium oxalate stones can often be diagnosed by their roentgenographic appearances. Attempts to dissolve calcium phosphate stones by making the urine acid are attended with little success because acid regimens increase the amounts of calcium and phosphate in the urine and thus tend to render it saturated. A solution of sodium citrate-citric acid at a *p*H of 4 is effective in dissolving calcium phosphate stones *in vitro* and *in vivo*. More recent studies suggest that sodium hexametaphosphate solutions may be even more effective.

VITAMIN K. Various phases of the chemical, physiologic and biologic aspects and the clinical usefulness of vitamin K are developing so rapidly that it would seem wise to withhold any dogmatic statements until the recently developed chemical products exhibiting vitamin K activity have been studied more extensively from biologic and clinical standpoints.

HEREDITY IN INFECTIOUS DISEASES. The part which inherited disposition may play in resistance to infectious disease is highly important. Diet is the most important environmental factor which has proved capable of changing susceptibles to resistants and vice versa.

VITAMIN B DEFICIENCIES. Though vitamin B had been administered to patients suffering from every kind of nervous disease the evidence shows that vitamin B_1 is of value in correcting and preventing beriberi and the neuritis which accompanies the disease and in the treatment of the neuritis associated with chronic alcoholism, pellagra and pregnancy. Its trial is warranted in patients who have peripheral neuritis associated with dietary deficiency or

under-nutrition from any cause and in peripheral neuritis and edema of undetermined origin. In regard to other neurological conditions, the use of B_1 is effective only if these disorders are caused by its deficiency. Crystalline B_1, to be efficacious in any serious nervous disease, must be given in large doses. Acute psychosis of pellagrins is quickly relieved by nicotinic acid but there is no evidence of complete relief of a chronic psychosis.

AVITAMINOSIS IN DIABETIC PATIENTS. Severe ketosis may follow exhaustion of coenzymes and logically may be expected to do so. Under chronic conditions, signs of avitaminosis might be expected to appear, with or without ketosis, when unusually rapid dextrose metabolism is brought about by the use of insulin.

ADDITION OF VITAMIN B_1 TO FOODS. American dietaries are unsatisfactory with respect to the content of vitamin B_1. A program fostering the addition of this vitamin to staple foods based on a desirable vitamin to calorie ratio would be in the interests of the public.

DAIRY PRODUCTS. Of the 100 billion pounds of milk produced annually in the United States, 46% is separated to obtain cream. There is a potential annual supply of skimmed milk of 40 billion pounds over and above that now converted into industrial products. Casein fiber as a substitute for wool, and lactose and lactic acid are among the by-products suggested.

PROTHROMBIN DEFICIENCY. Prothrombin deficiency in obstructive jaundice depends on the duration and degree of biliary obstruction, infection, avitaminosis K and malnutrition. Response to administration of vitamin K-cholic acid mixture is immediate except during rapidly progressing liver damage. Massive pathologic bleeding may occur with prothrombin values below 40%. Hyperprothrombinemia was not observed. Administration of dextrose, proper fluids and early decompression of the biliary tract are important.

LEGISLATION. The new federal Food, Drug and Cosmetic Act contains sections proscribing dangerous drugs, devices and cosmetics. More stringent control of deleterious ingredients in foods can now be obtained. Labels of foods offered for special dietary use must bear adequate information as to value.

BOTULISM. The demonstration of circulating or tissue toxin should aid in the diagnosis of botulism.

PITUITARY AND WATER DIURESIS. The rôle of the pituitary in the mechanism responsible for controlling water diuresis requires additional elucidation.

PERIPHERAL VASCULAR DISEASE. The fats in the blood are definitely increased in arteriosclerosis. Elimination of animal fats greatly reduces the concentration of the fats in the blood in many cases of hyperlipemia.

VITAMIN A IN BLOOD. The amount of vitamin A in the fasting blood is dependent on the amount in the diet. Evidence as to whether or not determinations of the vitamin A in the blood are of value in judging the nutritional status is contradictory. Data show that consistently low fasting blood values indicate that the body stores of vitamin A are being depleted; and very high values, that the intake of vitamin A is adequate. There is no correlation between the amount of vitamin A in the blood and the biophotometer readings.

HYPERPARATHYROIDISM AND PREGNANCY. Pregnancy may precipitate or aggravate hyperparathyroidism in some cases, thus accounting for the increased evidence of the disease in the female.

Journal of Nutrition

Vol. 18, December 1939

*The use of isolated radiation in experiments with the rat. II. Effects of darkness, visible, and infra red radiation on three succeeding generations of rats. E. M. Luce-Clausen and E. F. Brown.—p. 537.

*The use of isolated radiation in experiments with the rat. III. Effects of darkness, visible and infra red radiation on three succeeding generations of rats. E. M. Luce-Clausen and E. F. Brown.—p. 551.

*Adaptation to a low calcium intake in reference to the calcium requirements of a tropical population. L. Nicholls and A. Nimalasuriya.—p. 563.

*A quantitative chemical study of the urinary excretion of thiamine by normal individuals. D. Melnick, H. Field and W. D. Robinson.—p. 593.

*The determination of ascorbic acid in commercial milks. W. W. Woessner, C. A. Elvehjem and H. A. Schuette. —p. 619.

GROWTH AND STORAGE OF VITAMIN A. Radiation in the visible region of the spectrum promotes growth in rats fed the Sherman B-diet, as compared with groups fed the same diet and kept in complete darkness. This effect is more evident in the third generation of rats bred under controlled conditions of light, and more marked in males than in females. Radiations in the near and far infra red regions have a growth-promoting effect which is definite but less than that produced by visible light. Visible radiation and infra red radiation compensate for the marked inhibition of growth due to fluorosis seen in rats deprived of light. Rats kept in darkness and fed the Sherman B-diet, and groups fed a diet contaminated with fluorine are shown to store vitamin A in livers at a more rapid rate for weight at given ages than do comparable groups exposed for 12 hours a day to visible light. The lack of retinal stimulation by light may play a part in this result.

RADIATION AND REPRODUCTION. The age of opening of the vagina and the onset of first oestrus in female rats are delayed when rats are bred in complete darkness. Visible radiation and infra red radiation compensate to a demonstrable extent. Radiation plays a definite part in promoting the normal survival of young born in succeeding generations of rats reared under controlled conditions of light. The most effective radiations are in the visible, but radiations in the near and far infra red have some effect.

CALCIUM ADAPTATION AND REQUIREMENTS. The standard allowances for the daily intake of calcium for children and adults as given in Europe and America are considered too high. Many skeletons of Ceylonese children and adults have been weighed, and 10 of these have been analyzed for moisture and ash. The amounts of calcium in the skeleton at different ages, and the amounts of calcium per kg. of body weight have been calculated. Daily standard allowances for children and adults are suggested.

URINARY THIAMIN EXCRETION. There is a diurnal variation in thiamin excretion due to an appreciable lag in the excretion of the vitamin subsequent to its ingestion as part of the meals. The average 24-hour urinary thiamin values of 15 normal men and 9 normal women were 198 and 93 micrograms respectively. Variations in these values among normal subjects were not related to differences in urine volume, in metabolism, or in either the vitamin to calorie or thiamin to non-fat calorie ratio of the diet. The response of the subject to the oral test dose of extra thiamin is governed by the nutritional status of the individual and is independent of the adequacy of the diet consumed at the time of the test. The percentage of the available vitamin excreted in the urine, indicates extent of excess present. Standards are given for the interpretation of the urinary thiamin values in the diagnosis of thiamin deficiency.

ASCORBIC ACID IN MILKS. The influence of breed as well as milk production has been observed as affecting the quantity of ascorbic acid produced. No daily variation in the milk of individual cows was observed. Commercial raw milks contained an antiscorbutic potency which was only slightly less than fresh raw milks, and pasteurized milks on the average contained only one-half the latter potency. Mineral modification and homogenization apparently have a destructive effect on ascorbic acid.

Lancet

Vol. 237, December 2, 1939

•Nutritional deficiency of vitamin K in man: a study of four non-jaundiced patients with dietary deficiency. R. Kark and E. L. Lozner.—p. 1162.

VITAMIN K. In 4 patients, each presenting a history and physical signs of dietary deficiency disease unassociated with jaundice, the prothrombin-time was found to be prolonged. The oral administration of vitamin K was followed by a prompt return of the prothrombin-time to normal. There may be a dietary deficiency of vitamin K in man.

Public Health Reports

Vol. 54, December 1, 1939

•Riboflavin deficiency in man (ariboflavinosis). W. H. Sebrell and R. E. Butler.—p. 2121.

Vol. 54, December 22, 1939

•Hemorrhagic adrenal necrosis in rats on deficient diets. F. S. Daft and W. H. Sebrell.—p. 2247.

•Hemorrhagic cortical necrosis of adrenals in rats on deficient diets. A. A. Nelson.—p. 2250.

ARIBOFLAVINOSIS. Thirteen of 18 women receiving a special diet low in riboflavin developed a reddened, denuded lesion of the lips, maceration and fissuring in the angles of the mouth, and seborrheic accumulations at the nasolabial folds. Lesions disappeared following the daily administration of synthetic riboflavin; they reappeared following the discontinuance of the riboflavin, and again disappeared following riboflavin therapy. Six of these women were treated for varying lengths of time with nicotinic acid without benefit. Four of the remaining 5 women began a daily preventive dose of synthetic riboflavin on the 139th day and showed no lesions of any kind during the 365 days of observation. One did not receive any riboflavin at any time during the 365 days of observation.

HEMORRHAGIC ADRENAL NECROSIS. Extensive hemorrhagic necrosis of the adrenal glands of rats on deficient diets has been observed. The condition appears to be due most probably to a deficiency in some unidentified dietary factor. These animals have not shown the purpura or bone marrow changes reported elsewhere in rats on diets deficient in various factors of the vitamin B complex. The hemorrhagic adrenal necrosis may be part of the syndrome described as panmyelophthisis, although there is not sufficient evidence to prove conclusively that the two conditions are entirely unrelated.

HEMORRHAGIC CORTICAL NECROSIS OF ADRENALS. The hemorrhagic cortical necrosis of the adrenals and other lesions found in rats on diets deficient in some fraction of the vitamin B complex are described.

Science

Vol. 90, December 1, 1939

*The control of experimental alcaptonuria by means of vitamin C. R. R. Sealock and H. E. Silberstein.—p. 517.

Vol. 90, December 22, 1939

*The availability of the iron in dried peas and beans. L. Ascham, M. Speirs and D. Maddox.—p. 596.

Vol. 90, December 29, 1939

A defect in the metabolism of aromatic amino acids in premature infants: The role of vitamin C. S. Z. Levine, E. Marples and H. H. Gordon.—p. 621.

CONTROL OF ALCAPTONURIA WITH VITAMIN C. On a diet practically free of ascorbic acid the daily ingestion of *l*-tyrosine in 2 normal human subjects resulted in the excretion of significant amounts of homogentisic acid which could be completely prevented by the ingestion of reasonably large doses of crystalline ascorbic acid. The effectiveness of ascorbic acid in influencing the metabolism of tyrosine so as to prevent the excretion of homogentisic acid throws light upon the physiology of this vitamin and furnishes a useful tool in further studies on the intermediary metabolism of the amino acids, phenylalanine and tyrosine.

AVAILABILITY OF IRON IN DRIED PEAS AND BEANS. The iron in black-eyed peas, green and yellow split peas, navy beans, pinto beans and butter beans, is completely available to the nutritionally anemic rat for the regeneration of hemoglobin.

Scientific Monthly

Vol. 49, December 1939

*Charles Darwin and child development. A. Gesell.—p. 548.

CHILD DEVELOPMENT. "Without doubt the first three!" This was the emphatic answer which Charles Darwin gave when as an old man he was asked which years of life he considered most "subject to incubative impressions." He was deeply intrigued by the phenomena of human infancy, making observations on his own 10 children which covered a wide range of subjects such as vision, winking, hearing, anger, fear, pleasurable sensations, affection, association of ideas, reason, left-handedness, moral sense, unconsciousness, shyness, language, sympathy. Darwin's mind ranged over all natural phenomena—geology, botany, zoology, anthropology.

INSTITUTION MANAGEMENT

The American Restaurant Magazine

Vol. 23, December 1939

*You'll always meet a friend at Port's. H. C. Siekman.—p. 28.
*Kiddie menus." J. Ebersole.—p. 36.
*New products—new profits (part 2). P. R. MacAlister.—p. 39.
*The latest chiffon pie favorite. M. B. Strause.—p. 40.
*Buying foods by specification. S. Mallick.—p. 44.
*New equipment for restaurants.—p. 54.

PORT'S RESTAURANT. Friendly hospitality has made this restaurant so famous that it had to enlarge, beginning in the kitchen, then the tea shop and finally the dining rooms. The spirit of cooperation among employees is an important factor back of the success of the business.

CHILDREN'S MENUS. Family business advanced amazingly since the Ebersole restaurant, White Plains, N. Y., began to emphasize nourishing items and decorations on menu to attract the child's interest. Three menus are reproduced to illustrate the arrangement.

NEW PRODUCTS. An unusual number of novel, practical, sanitary and economical products are now available for restaurant modernization. Colored glass for walls, mirrors, furniture and eating equipment is particularly interesting. Through unusual use of mirrors and glass, the Forum Cafeteria in Chicago has increased customer appeal and profits. Plastics are rapidly coming to the fore for decorative and practical purposes. Carpeting now has greater durability and should be used for richness. Rubber companies have put out practical and durable artificial leather highly resistant to stains and burning. Venetian blinds of bakelite are practically everlasting and very decorative. A new wood-weave screen is pliable and fits any empty spot, and is useful in obtaining pleasing wall effects.

LEMON-ORANGE CHIFFON PIE. Describes a new lemon-orange chiffon pie. Detailed instructions require preparation of the lemon-chiffon first, the orange chiffon second, both then arranged in graham cracker crust and topped with whipped cream.

BUYING BY SPECIFICATION. The author's experience shows top quality foods give 12–15% more yield than second qualities. Checking weight count or quality when goods are received is essential. The value of specification buying of meats, fish, vegetables and fruits is discussed in detail.

NEW EQUIPMENT. Of special interest to restaurants are the following new products: durable cushioning for chairs made of U. S. royal foam sponge, porcelain enamel in unlimited color range for store fronts and structures, suitable for either old or new buildings and an odor absorber unit for garbage disposal developed by Dorex Air Conditioning.

Buildings and Building Management

Vol. 50, January 1940

*New wiring methods approved.—p. 11.
*Water and water piping. II. Pipe corrosion and water analysis. W. J. Ryan.—p. 13.
*Modern floor coverings. II. Practical types and applications.—p. 21.
*Building material dimensions. M. W. Adams.—p. 25.
Visual layouts.—p. 26.
*Fire prevention. P. W. Eberhardt.—p. 27.
Linoleum-covered walls.—p. 28.
*Tests assure performance of automatic sprinklers. N. Bicking.—p. 29.
*Profitably air conditioned. G. H. Watson.—p. 32.
*Modernized heating reduces costs. J. Lumpp.—p. 34.
*Apartment house accidents. E. Burke.—p. 36.

WIRING. Buildings can be rewired at considerably less cost if the recommendations of the National Fire Protection Association, as written into the code for 1940, are used. The code now includes approval of thin-wall rubber insulation, thin-wall synthetic insulation, and 40% conduit fill with two wires and 50% conduit fill with 3 or more wires. The committee failed to recommend adoption of bare neutral in conduit, pending further study by the American Research Committee on grounding.

WATER PIPING. This article deals with pipe corrosion and water analysis. The corrosiveness of water toward pipe lines and tanks is due to a combination of chemical properties possessed by some waters. A water analysis shows

the hardness, corrosiveness, and the character of the water as regards its action on the metal of pipes.

FLOOR COVERINGS. This article deals with principal types and applications of floor coverings. Each proposed installation should be regarded as a separate problem, rather than merely another application of a standard material, because of differences in location, size of installation, service requirements, appearance standards and quality of material. Only the building manager has the necessary knowledge of occupancy conditions, probable traffic, and actual maintenance methods. Gives characteristics of linoleums, asphalt tile and flooring, rubber tile and flooring, and cork carpet and tile, and their installation.

BUILDING MATERIALS. A new committee of the American Standards Association was formed to consider standardization of building material sizes and shapes to eliminate waste in construction methods, and to make building parts available to the industry in standard sizes and coordinated dimensions. Since coordination is a question of the interfitting of parts in the structure, this work is first concerned with the development of sound assembly details. Economies offered by coordination include lower field erection costs and the replacement of manufacture of many materials on a strictly custom basis by quantity production of standard sizes.

FIRE PREVENTION. Storage of paints and lacquers constitutes a fire hazard. Scientific methods of fire prevention include carbon dioxide fire extinguishing systems which automatically go into action when abnormal heat rises occur suddenly. Portable carbon dioxide extinguishers are located throughout the building. Some are fixtures of the fire-fighting truck suitable for elevator transportation and are located ready for use near the elevator bank.

AUTOMATIC SPRINKLERS. All automatic sprinklers must be approved by the Underwriters' Laboratories before going on the market. Tests employed include corrosion tests, temperature settings and construction, efficiency, and spot tests. Manufacturers realize the importance of these tests in order to maintain the sprinkler's record of 96.4% efficiency established in the last 40 years.

AIR-CONDITIONING. Air-conditioning recently installed in two Mobile bank buildings was found to prove its worth last summer. As neither of these buildings was designed for air-conditioning, some of the installation details included will no doubt be of interest to others facing the task of air-conditioning existing buildings.

HEATING. A reduction in heating costs of approximately $600 per year has been accomplished through an expenditure of only $1583, a 32% return. Three major steps recommended by a steam heating expert to increase efficiency and decrease cost were replacement of the obsolete radiator traps, changes in connections on the main steam pipes making it possible to supply heat to the first floor space independent of the floors above, and installation of an automatic control to balance the system properly.

ACCIDENTS. Discusses some of those liabilities affecting the public, tenants as well as visitors, based on information obtained from the Firemen's Fund Insurance Group of San Francisco. Apartment house accidents divide into two broad classifications: those emanating from unexpected hidden hazards and those caused by obvious hazards arising from physical defects in the premises. The most common accidents are slips and falls. Next in line is stumbling down stairways. The article gives figures on numbers of accidents and examples of how they occurred.

The Horwath Hotel Accountant

Vol. 20, January 1940

•Build up breakfast. Editorial.—p. 2.
•Table butter test.—p. 2.
•Food and beverage costs.—p. 3.
Unsound financial policies in clubs. E. B. Horwath.—p. 6.
•Licenses, taxes and information returns.—p. 7.

BREAKFAST. The mood of the morning requires that breakfast be served quickly and inexpensively, with little coffee shops recommended as the solution to the lack of hotel breakfast sales.

BUTTER. Tests made to determine losses in melting butter show that its use represents approximately a 25% loss in weight.

FOOD COSTS. Statistics contributed by 60% of all reporting hotels indicate a rise of 1% in food costs per dollar for the month of October 1939 over October 1938.

LICENSES AND TAXES. For New York and Chicago hotels, lists of city, state and federal taxes and licenses required have been compiled. In addition to being valuable in avoiding legal difficulties, the lists can be used in itemizing and estimating the financial budget.

Hospitals

Vol. 14, January 1940

*Organization and management of the hospital food service—part II. E. M. Geraghty.—p. 90.

FOOD SERVICE. Miss Geraghty, in the second in a series of articles on hospital food service, discusses the food budget and the need to watch for waste as a control on expenditure. She recommends issuing proper amounts of uncooked food to cooks and watching yields, and the proper selection, training and control of employees. Suggestions for equipment and building planning are included.

Hospital Management

Vol. 48, December 1939

*An administrator's viewpoint of the qualifications of a dietitian. A. J. Will.—p. 40.
*Establishing specifications for food service equipment. A. W. Janzen.—p. 45.

ADMINISTRATIVE DIETITIANS. Schools should give more thought to the practical aspect of the training of the dietitian. The author gives his opinion as to the qualifications, training and experience of an administrative dietitian.

EQUIPMENT SPECIFICATIONS. Specifications used in buying equipment should include accurate description in trade terms of all dimensions, materials, finish gauge, workmanship, traps, fittings, connections and facts that control quality in relation to cost.

Hotel Management

Vol. 36, December 1939

*Chart of American apples.—p. 6.
*With your engineer.—p. 8.
The inn side. J. O. Dahl.—p. 15.
Your 1940 hotel budget. P. J. Hagan.—p. 21.
*Model room, Hotel Gibson. M. A. Clark.—p. 22.
Better decoration. M. N. Sipos.—p. 24.
A menu a day for a month. A. Hoffer.—p. 30.
*Dictionary of cheeses.—p. 32.
*Equipment news for December.—p. 68.

Vol. 37, January 1940

*Management's chart of fruits.—p. 6.
*How good is your refrigeration? A. N. Brent.—p. 10.
*How to know your laundry. M. A. Pocock.—p. 12.
*At the Pennsylvania Hotel, New York.—p. 22.
*Introducing 500 ways to cut food costs. I. J. B. O'Keefe.—p. 26.
*Training for waitress service. J. O. Dahl.—p. 30.
Ten common errors in fire insurance. E. L. McManus.—p. 32.
Tips from a busy host. L. E. Witney.—p. 33.
How to buy better mattresses. C. M. Dahl.—p. 36.

APPLES. Apple chart includes source, time of reaching market, size, color, flavor, texture, uses, grading and packing for 27 varieties of commonly used apples.

COST OF HOT WATER. Since it takes an average of 7 lb. of steam to raise a cubic foot of water to 165°F., the temperature of hot water required in most hotels, A. N. Brent has devised a chart by which the administrator can readily find the cost of the hot water supply for his particular establishment.

MODEL ROOM. The general manager of the Hotel Gibson, Cincinnati, tells how his guests reacted to the rooms furnished in different ways—modern, studio and present Hotel Gibson decoration—as a check on guest preferences, so that plans for redecorating could take these into consideration. He found permanent guests favoring the studio type of furnishings, traveling clientele their present style, and women, the modern room. An accompanying chart illustrates specifications for typical room furnishings, giving color, material or quality for each item of furniture, decoration or interior finish as subsequently adopted by the hotel.

CHEESES. Facts about little known and also familiar cheeses, the classification, and the

factors upon which differences in flavor and consistency depend. A map and chart give type, age of curing, origin and place of present production for the better known cheeses.

EQUIPMENT. "Precipitron", Westinghouse Electric's new air-cleaning device, is claimed to capture up to 90% of air-borne dirt and prevent it from settling on furniture and rugs.

For restaurant and hotel rest-rooms, Sterilseat Sales Corporation now utilizes the Westinghouse "Sterilamp" to sanitize toilet seats, rendering them practically free from germ life.

A new "Reco Vegetable Peeler" by Reynolds has a built-in timer which automatically stops the machine at the end of the proper peeling time. The machine is available in 15, 30 and 60 pounds per minute capacities.

FRUITS. Chart gives varieties, types, grade, specifications, packing, modality of packing, average portion size and general uses for canned apples and apple sauce. Includes varieties, size, season, color, shape, acidity, uses, grading and retail or wholesale package of 5 varieties of fresh apricots, 5 types of canned apricots and 2 types of dried apricots.

REFRIGERATION. A list of questions concern small details of refrigeration which would be answered in the affirmative if your refrigeration is in perfect order.

LAUNDRY. As operating costs on the average ironer will run between $3.50 and $6 per hour, effective ironer production is necessary to cut down the time the equipment is used. Careful preparation of all flatwork before ironing should be required. Quality work requires space and equipment for adequate shaking out of flatwork before it is ironed. In planning the ironing schedule, consider the requirements of the washers and the delivery of the goods to the laundry.

PENNSYLVANIA HOTEL. Profits from modernized dining rooms is well illustrated by the modernization of the already popular lunchroom of the Pennsylvania Hotel, New York, to produce a modern, bright, gay, colorful yet restful coffee shop, simple and practical, built for quick and efficient service. The average check jumped from 51¢ to 59¢ within 2 weeks and seat turnover increased 33%. Layout and complete modernization data are given in the article.

CUTTING FOOD COSTS. The first in a series of 12 articles explaining how to control food costs by a study of the "leaks" as the food passes from the market to the customer, and how to stop these leaks and have a profitable operation. This article deals with efficient buying, recommending buying consistently from a few reliable dealers rather than on the market, and buying on a cash basis for the small operator. Case histories are given to show how leaks occur and how they may be prevented.

WAITRESS TRAINING. The first in a series of detailed outlines for hotel and restaurant training suitable for use in vocational schools and restaurants. Gives a complete outline for a course of 12 lessons with subject matter to be included in each lesson and the best methods of teaching that lesson. Demonstrations are stressed particularly as the most desirable method of teaching.

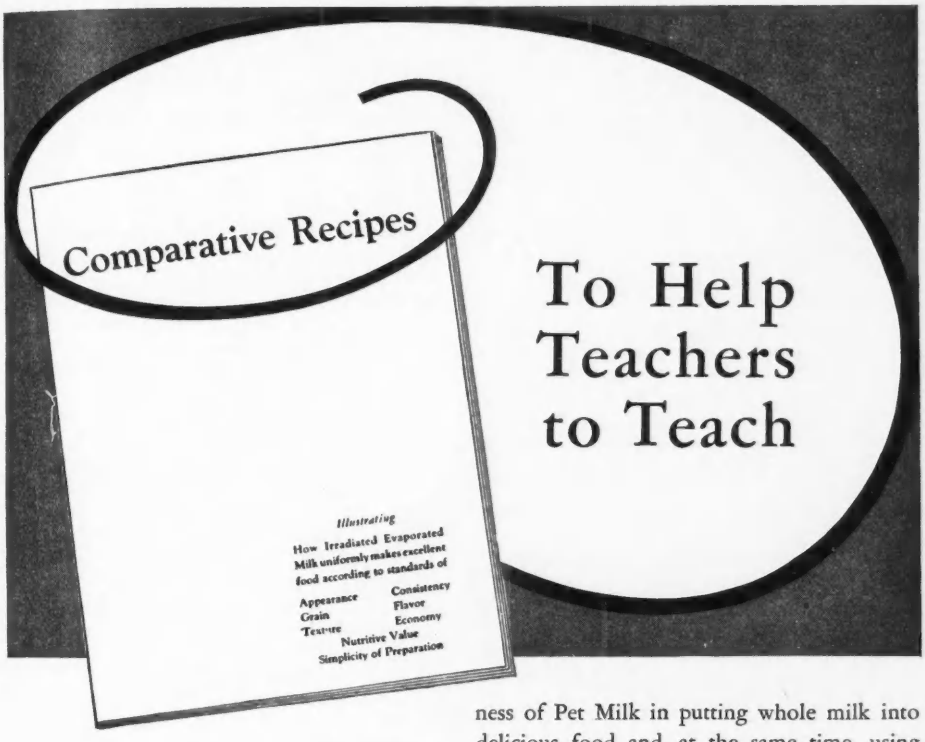
The Hotel Monthly

Vol. 47, December 1939

Investment in modernization of 30-year-old hotel is profitable.—p. 12.
Hotel stewarding at Massachusetts State College. D. Treadway.—p. 15.
*Housekeeper's primer. II. Inspection of work in housekeeping department. J. C. Van Ness.—p. 29.
*How to launder bed linens.—p. 32.
*Problems that confront the culinary profession. L. Boomer.—p. 33.
*The birth of the selective menu. Editorial.—p. 36.
*Diesel solves problem of hotel ice cost.—p. 38.
*The coffee shop—roast turkey. E. Boles.—p. 41.
100 years of menu making. A. Shircliffe.—p. 46.
*The first dishwashing machine.—p. 61.

GUEST ROOM. The third chapter of the "Housekeeper's Primer" shows why rigid inspection is the most important factor in assuring room service of high quality. Inspection begins with the ease of unlocking and opening the door, and includes a check on the condition of the ceilings, walls, windows, floors, furniture, bathroom, halls and corridors. Points for consideration and thoroughness in inspection procedure are presented under each section.

LAUNDERING BED LINEN. A set of recommendations for laundering sheets considers the



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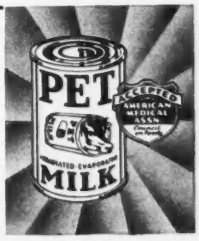

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amount of soil, washing medium, process of washing, drying, ironing, and storing as they affect the finished clean product and the life of the sheets. The Pequot "Quick-Pick" tab provides a different color tab for different sizes of sheets, thus quickly identifying the size without unfolding.

CULINARY PROBLEMS. The old style à la carte menu with too large portions and exorbitant prices has been supplanted by new menus with more reasonably sized à la carte portions and prices incorporating the new style of service with the selective menu as its basis. Prices of meals on the menu with the selective arrangement are based upon the principal dish of the suggested meal combination. The increased use of the selective menu has made dietetics of import in hotel operation. Four important points to consider when making a selective menu are presented.

SELECTIVE MENU. The selective menu, on which the price of the main dish determines the price of the entire meal, was first used by Mr. Shircliffe in 1929. It is proving increasingly popular. A typical selective luncheon menu arranged by Mr. Shircliffe for the Wrigley Restaurant is reproduced in the article.

ICE COST CUT. With Diesel power instead of steam or electric motor, the cost of preparing ice for hotels can be cut to about $80.00 per month. Maintenance cost is practically nothing.

ROAST TURKEY. A recipe for bread stuffing, gravy, and other recipes for the use of leftover turkey and giblets are given.

DISHWASHING. The first dishwashing machine produced by G. S. Blakeslee in 1879 was known as the Haskins dishwasher.

Journal of Home Economics

Vol. 32, January 1940

Popularizing research findings in home economics—the point of view of an administrator of research. A. B. Conner.—p. 1.

Food needs in growth. M. S. Chaney.—p. 4.

*Setting of standards by selection and care of interior surfaces, furniture, and furnishings. R. S. Godfrey.—p. 11.

How price and income affect food purchases. C. Van Syckle.—p. 15.

*Time allowed the teacher for managing the school lunchroom. E. Gilbert.—p. 25.

*The management of college cooperative halls. F. W. Gleiser.—p. 28.

The adequacy of labeling certain textile fabrics with regard to fiber content. H. Fletcher and I. Dennhardt.—p. 37.

RESIDENCE HALL FURNISHINGS. The business director of 8 residence halls at the University of Texas, recognizing that young people are still forming habits and ideals, realizes her responsibility to develop their standards of living. Descriptions of several dormitories are included.

SCHOOL LUNCHROOM. Edna Gilbert, chairman of the school lunch committee of the A.H.E.A., has conducted a questionnaire, the findings of which indicate that most teacher-managers of school cafeterias feel handicapped in being expected to carry the responsibility of full-time managers. Miss Gilbert suggests that a group of teachers get together to set up standards with which they can win the cooperation and goodwill of school principals and administrators.

COOPERATIVE HALLS. The head of the department of institution management at Iowa State College states her problems in the college cooperative halls and how she deals with them. First, the system must be self-supporting, yet the charges compatible with the student's financial means. Second, life in the cooperative must contribute to the student's training. Third, high standards in every phase of managing the "student cooperator's work" must be maintained. Methods for control are the same as for all successful administration.

Modern Hospital

Vol. 54, January 1940

*The way to the public's heart. B. B. Ashley.—p. 92.

*Opportunities in small hospital. H. Branham.—p. 93.

*Care of floor kitchens. A. Rose.—p. 94.

*Food for thought.—p. 96.

GOOD FOOD. St. John's Riverside Hospital, Yonkers, N. Y., has a reputation for friendliness and good food. The dietitian says this is possibly due to the friendly spirit fostered by an "Open House" twice a year, special parties and daily contacts with patients and personnel.

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SMALL HOSPITAL. The trained dietitian is almost indispensible in a small hospital and by combining her duties with other departments such as housekeeping and laundry, she will have an important full-time job. Teaching good food habits in the hospital is an important contribution to every small community.

KITCHEN FLOORS. Simple cleaning reagents and daily schedules are given to maintain kitchen floors in good condition.

MEAT REFRIGERATION. Discusses prevention of bacterial growth in meat by refrigeration.

The Nation's Schools

Vol. 25, January 1940

*Designed for today. L. C. Fawcett.—p. 72.
*Stimulating cafeteria employes. O. Fay.—p. 76.

SCHOOL CAFETERIA. The home economics supervisor in East Orange, N. J., describes the new school cafeteria layout and organization which is feeding 1000 children and providing a meeting place for many local groups. She also includes a week's menu and prices.

STIMULATING INTEREST. A dietitian at Rochester, New York, tells how she stimulated interest in food preparation and service in the school cafeteria by demonstrating good and bad methods at a joint meeting of managers and employees.

Personnel Journal

Vol. 18, December 1939

*Company and community relations. C. S. Slocombe.—p. 203.
*The Westinghouse safety inventory. T. O. Armstrong and H. B. Duffus.—p. 211.
How to prepare a job manual. R. D. Williams.—p. 219.
Workers at play. National Recreation Association.—p. 227.

SOCIAL RELATIONS. The study of the environmental influences of country and city life, conducted by the Personnel Research Federation, resulted in the following conclusions concerning factors which affect workers' efficiency: higher death rate and lower birth rate in the city; community responsibility is not developed in the city; the rates of divorce, suicide and crime are higher in the city, with medium-sized cities having the greatest variety of reasonably priced recreational facilities. Conditions in city life were found to create in the lives of employees an absence of managerial responsibility for their families that developed a desire to interfere with the administration of business. There is less chance of harmony of ideas when men form opinions individually than when ideas are formed through discussions in typical country life and there is a tendency to join in vague world reform movements rather than to concern themselves with immediate community interests.

SAFETY INVENTORY. Since there is always room for improvement, Westinghouse Electric takes a yearly inventory designed to find employees' attitudes toward the safety program, to stimulate interest in handling equipment carefully, to create interest in health and to give employees the chance to make suggestions for improvement of the program. The inventory then becomes the basis for the planning of the coming year's program.

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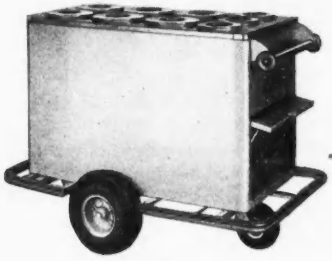

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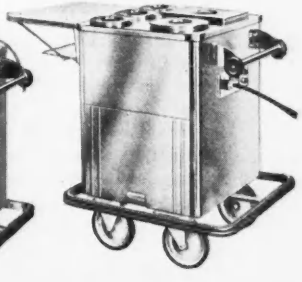
- Convenient, speedy handling of trays and equipment assured by greater shelf area.
- Extra and double meat tray capacity afforded by slide-easy warming drawer which holds standard utensil.
- Smooth, rigid, two-piece body construction. Long life, good appearance.



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NEWS NOTES

The Mid-year Meeting of the Executive Board of the American Dietetic Association is being held at the Drake Hotel, Chicago, March 2–3, the first session being called to order at 10:00 a.m., Saturday, March 2.

Catholic Hospital Association. Under the patronage and by the invitation of His Excellency, The Most Reverend John Joseph Glennon, S.T.D., Archbishop of St. Louis, the officers and Executive Board of the Catholic Hospital Association of the United States and Canada announce that the Silver Jubilee Convention of the Association will be held at the Municipal Auditorium, St. Louis, Missouri, June 17–21, 1940.

Conference on Children in a Democracy. The first session of the Conference, called by the President, was held in Washington in April 1939. The second, authorized by the President, was held in Washington January 18–20. At this session, reports prepared by the Report Committee and staff, with the assistance of groups of consultants, were considered and plans for follow-up work were discussed. At the invitation of the Honorable Frances F. Perkins, Secretary of the Department of Labor, Anna M. Tracy of the Florida State College for Women, Tallahassee, past president of the A. D. A., attended the second Conference in January. About 600 people were in attendance and a detailed report of this meeting will appear later in the JOURNAL.

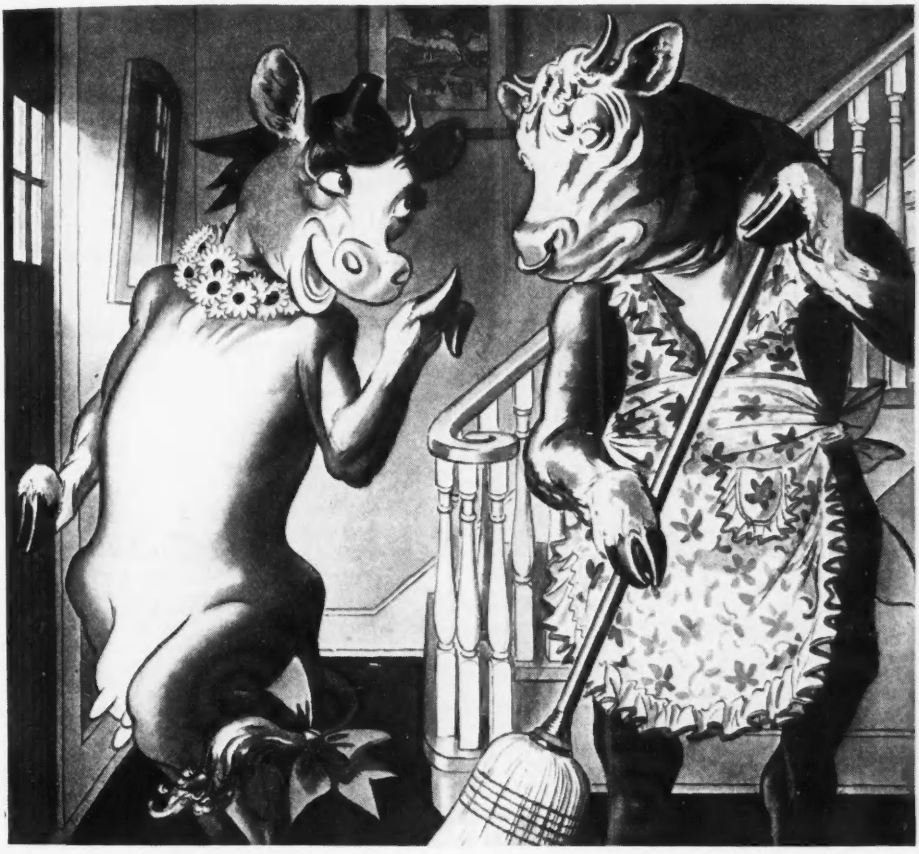
Institute of Food Technologists. The first meeting of the Institute of Food Technologists will be held June 17–19 at the Morrison Hotel, Chicago. The program will consist of four 3-hour sessions devoted to symposiums on "Food Engineering" and "Influence of Processing on Vitamin Content of Food" supplemented by voluntary and solicited papers on food preservation, and composition, methods of analysis, and packaging of foods. The third day is to be given over to visiting plants characteristic of Chicago's food manufacturing industry.

The Institute was organized in Cambridge, Massachusetts, in 1939 at the close of the Second Conference on Food Technology held under the auspices of the Massachusetts Institute of Technology. The officers are: president, Dr. S. C. Prescott, dean of science, Massachusetts Institute of Technology; vice-president, Dr. Roy C. Newton, chief chemist, Swift & Company, Chicago; secretary-treasurer, Dr. G. J. Hucker, New York State Agricultural Experiment Station, Geneva. The membership consists of chemists, bacteriologists, process engineers, and others similarly trained or experienced in the manufacture, preservation and handling of food.

Report of the Chief of the Bureau of Home Economics, 1939. Among the activities undertaken for the past year, as reported by Louise Stanley, chief of the Bureau, are economic studies of families of farm operators and families in villages and small cities, in which farm families were shown to be the best-fed population group in the country, and village families, the poorest. City families fall between the two in the proportion having adequate food, according to an analysis of dietary records from the consumer purchases study. The difference between diets of farm and small-city families tends to lie in the "protective" foods. Farm families consume an average of about 60 per cent more milk, 15 per cent more butter, and 25 per cent more leafy, green, and yellow vegetables, than small-city families. Farm diets, therefore, tend to be richer in protein of high quality, in vitamin A, in iron and in calcium.

The Foods and Nutrition Division has directed its researches toward (1) making more definite our information on the kinds and amounts of essential nutrients required to maintain and promote maximum health and well-being, (2) collection and interpretation of data on food composition and to make possible the translation of these requirements into terms of everyday diets, and (3) studies of utilization and influence of methods of production and processing on quality of food.

National Association of College Unions, which met in December in Gainesville, Florida, devoted much discussion to the question of college food services. According to Anna M. Tracy of the Florida State College for Women, a round table on food service will constitute part of the program at the 1940 meeting to be held at the University of Pennsylvania in December.



"Remember, Elmer, I'm a Career Cow!"

"I DO HATE to leave you with all the housework," mooed Elsie, the Borden Cow, to Elmer, the Bull. "But my career comes *first*, you know!"

"You're seeing a lot of that veterinary," commented Elmer. "Is *that* necessary to your career?"

"Very necessary," replied Elsie. "It's the start of Quality Control. That young veterinary makes sure that I'm always in perfect health and therefore giving the richest and purest milk for use in Borden foods."

"But, Elsie," pleaded Elmer, "there are *other* things in life besides milk!"

"That's just it," exclaimed Elsie. "There are . . . Borden's ice cream, evaporated milk, malted milk, Klim, and many other Borden products whose goodness we *have* to be sure of. And now be a good boy and dust everything neatly. I'll be back soon, dear."

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Borden experts, scientists, and laboratory workers exercise an eternal vigilance over the quality and purity of all Borden Products, from the farm to the placing of the product in the consumer's hands. That is one reason why "Borden" is such a reassuring name on *any* milk product you may prescribe.

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The Second Annual Congress on Industrial Health, sponsored by the American Medical Association, met January 15-16 at the Palmer House in Chicago. Among the speakers at the opening session was Dr. Lela E. Booher, U. S. Department of Agriculture, Washington, who discussed "Adequate Nutrition for the Industrial Worker."

The Forsyth Dental Infirmary, Twenty-Fifth Annual Report. In the director's report the following comment appears: "The evidence is cumulative that nutritional guidance affords the most notable step in prevention [of tooth disintegration]. Searching inquiry has shown not only that the soundest teeth and most normal jaws accompany a record of sound nutrition and health history from before birth to the moment of examination, but that diametrically opposite conditions follow poor nutrition. Change the nutritional state and the oral state changes accordingly. Over and over again this has been found to be the case. Two considerations are entertained in the nutritional examinations and recommendations, one the selection of food, and the other the manner in which the organism utilizes the dietary factors. The examination is made on the basis of the diet as a whole rather than on that of single factors. Habits are noted principally for their effects on the physiological processes. Tables of food values or other mathematical formulas cannot be considered as fixed but rather as labile standards subject to a great variety of biological influences, among which may be mentioned rate of growth, endocrine activity, intestinal rate, idiosyncrasies, and many other physiological conditions. It is interesting to note that general and dental improvement go hand in hand."

The report lists the staff of lecturers and under the subject of nutrition appears the following: Dr. George R. Minot, professor of medicine, Harvard University Medical School, "Dietary Deficiency Disease"; Ruth L. White, chief, Nutrition Department, Forsyth Dental Infirmary, "Nutrition"; and Dr. Mark D. Elliott, member Research Staff, Forsyth Dental Infirmary, "Retardation of Caries by Nutrition". The report of the Infirmary for Children lists, under the Nutrition Department, 1042 active cases seen and 1031 conferences held during 1938.

Nutrition Forum. During the Farm and Home Week meeting at Ithaca, N. Y., February 12–17, the New York State College of Home Economics at Cornell University presented the following program:

Dr. Helen S. Mitchell, Massachusetts State College, Amherst, Protein and Calorie Needs.

Dr. Leonard A. Maynard, Cornell University, Mineral Metabolism.

Dr. Leo C. Norris, Cornell University, Vitamin Metabolism.

Dr. Clive M. McCay, Cornell University, Adult Nutrition and Longevity.

Helen Monsch, New York State College of Home Economics, Child Nutrition and Family Feeding.

Dr. William A. Sebrell, Jr., U. S. Public Health Service, Washington, Reclaiming Human Beings for the South.

Dr. Mitchell, Facts and Fads about Foods.

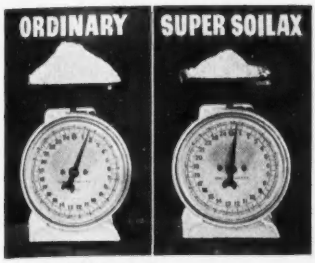
Dr. Sebrell, Summary and Conclusion.

Other food and health talks given by the college staff members were: "What Cooking Can Do to Vegetables"; "Home, the Place for Developing Good Health Habits"; and "How an Egg Develops and Deteriorates". Helen Monsch, as in other years, held a child nutrition conference for mothers wishing help on child feeding problems.

A new feature this year was 15-minute food preparation demonstrations given each day by students in food courses at the College of Home Economics. A question and answer period, in which guests were encouraged to participate, followed each demonstration.

Clara Gebhard Snyder of the Wheat Flour Institute, Chicago, again demonstrated for Farm and Home Week guests, this year giving "Ideas for Baking Day". "Some Dishes from Hawaii" were described by Sara Kerr, home demonstration agent in Hawaii last year. Other talks were "Preparation and Preservation of Maraschino Cherries"; "Preparation and Freezing of Strawberries and Snap Beans"; and "Home Preservation of Fruit Juices".

A large part of the available space was given over to the exhibits of foods and nutritional knowledge, and essential tools to health; fruit and vegetable products; are your meals nutritionally adequate?; nutritional value of commonly used foods; and egg quality and its importance in egg cookery.



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A NEW CHEMICAL *in Super Soilax makes it form a more clear, more freely-rinsing solution . . . quicker! It saves you time, trouble and money in your dishwashing.*

FREE! *The special, patented waste-preventing Super Soilax Automatic Hydraulic Dispenser is loaned free to all Super Soilax users.*

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WHEN DISHES, GLASSES, SILVER ARE CLEAR AS WELL AS CLEAN!

● Naturally, your service is as clean as your foods are pure. But, remember, it's what the eye sees that makes the mouth water! Film-covered dishes, foggy glassware, dull silver—all *technically clean*—can kill the most robust appetite!

For dishes that are *clear* as well as clean . . . glasses that sparkle with life . . . silver bright as new—use Super Soilax in your dishwashing operation. It's no ordinary dishwashing compound!

Super Soilax does not precipitate hard water lime. It forms a transparent *free-rinsing* solution . . . makes dishes clear *quickly*, as well as *surely*. And equally important, Super Soilax does this extra job at a *lower cost per month* than many compounds selling for far less *per pound*.

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The Nation's First Census of Housing. A comprehensive picture of housing and home ownership in the United States will be compiled from information to be gathered by the 120,000 census enumerators in conjunction with the Sixteenth Decennial Census to be conducted by the U. S. Bureau of the Census in April. Data in response to a schedule of thirty-one questions bearing on the type of structure, equipment, and ownership—will be obtained for each of the approximately 35,000,000 dwellings throughout the country. Housing experts point out that the information gathered will be of inestimable value in the determination of future housing policies. The tables will also help social workers to establish relationships between certain types of housing and human needs by correlating their own data on characteristics and locations of clients with the census information on characteristics of the homes.

The University of Minnesota, Center for Continuation Study, Continuation Course in Dietetics, January 29-31, enrollment in which was limited to members of the American Dietetic Association and those whose training and experience would qualify them for membership, presented the following program:

Julius M. Nolte and Dr. William A. O'Brien, Department of Postgraduate Medical Education, Orientation.

Gertrude I. Thomas, assistant professor of dietetics, University of Minnesota, Normal Diet.

Dr. Martha Koehne, Ohio Department of Health, The Vitamin Question.

Dr. Eaton M. MacKay, Scripps Metabolic Clinic, La Jolla, Sodium and Potassium in the Diet.

Dr. John A. Layne, instructor in medicine, and Angeline D. Mannick, Gastrointestinal Diseases.

Dr. C. J. Watson, associate professor of medicine, and Evelyn Pearson, Liver and Gall Bladder Disease.

Dr. Charles E. Rea, assistant professor of surgery, and Victoria Pearson, Postoperative Feeding.

Dr. B. A. Watson, assistant professor of preventive medicine, Diets in the Treatment of Diabetes.

Anna McCuish, Mabel G. Netz, Elizabeth Ryan, and Mary A. Foley, Symposium, Education: Nurses, Medical Students, College Students, Patients.

Dr. Koehne, Dental Caries.

Dr. MacKay, Diets in the Treatment of Nephritis.

Dr. Philip W. Brown, Mayo Foundation, Vitamin B Deficiency Diseases.

Alice Biester, Ethel L. Phelps, Frances Dunning, and Dr. Ruth E. Boynton, Demonstration: Training of Dietitians, Purchasing Textiles and Clothing, Cafeteria and Dining Room Service, Student Health Service.

Dr. Clyde H. Bailey, professor of agricultural biochemistry, and Inez M. Hobart, Symposium, Nutrition: Technology, Education, Social Welfare.

Dr. Albert V. Stoesser, Department of Pediatrics, Diets in the Treatment of the Allergic Child.

Dr. MacKay, Obesity and Undernutrition.

Dr. John J. Boehrer, instructor in medicine, Dietary Factors in Anemia.

Lucile Townsend, Thelma Hara, and Ellen S. Beaton, Demonstration, Hospital Food Service: Glen Lake Sanatorium, Midway Hospital, Northwestern Hospital.

Warren W. Fisk, General Extension Division, Administrative Problems.

Dr. Koehne, Nutrition, A Phase of Modern Preventive Medicine.

Mrs. Katharine M. Ansley. Effective March 1, Mrs. Ansley, formerly executive secretary of the American Home Economics Association, takes up her new work in charge of the food service of the new Student Union building at the University of Illinois, Urbana. Prior to 1936, when she accepted the position with the American Home Economics Association, Mrs. Ansley was director of school lunches at Washington, D. C., where she had charge of the serving of daily lunches to 8000 school children in more than 100 schools. Her duties at the University of Illinois will include the operation of food service areas equipped to serve 1000 students and others daily.

Edith M. Barber, national publicity chairman, A. D. A., announces her new book, *Edith Barber's Cook Book,* to be published by Putnam's

Ry-Krisp is made of whole rye, salt and water. Each wafer (6 grams) contains 6 I. U. vitamin B1.
SPECIAL DIET HELPS FOR DIETITIANS
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Easy-to-follow Recipes and Food Lists for Wheat, Milk and Egg-free Diets

Imagine what a help it would be to have, for quick reference, a variety of recipes for delicious dishes which can be prepared without wheat, milk or eggs. Dishes, for example, like Candied Apple Betty, Gravy and Stuffed Tomatoes—all safe, tempting, appetizing.

Imagine, too, the convenience of having, for distribution, these handy Diet Booklets that tell at a glance which foods can and cannot be eaten safely by those allergic to wheat, milk or eggs.

These special recipe and diet booklets are yours for the asking—no cost, no obligation. Simply sign and mail the coupon.

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Unlike most leavened breads which contain wheat, milk or eggs, the 3 principal allergens Ry-Krisp is made simply of whole rye, water and salt, therefore is a safe bread to include in wheat, milk and egg-free diets.

Tempting in appearance, delicious and satisfying in flavor Ry-Krisp is the favorite every-meal bread in many families. It is available at most grocery stores and food markets throughout the United States and Canada.

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this month. *No Servant Problem* is to be published later this year. The latter will be the fourth book to be authored or co-authored by Miss Barber. She is junior author of the authoritative textbook for nurses, *Nutrition in Health and Disease*, and author of *What Shall I Eat?*, published by Macmillan.

Deaths. Word has been received of the death of Juliette Sykes Hamilton of Camp Roosevelt, Ocala, Florida, and that of Viola Zirkle of the Lima Memorial Hospital, Lima, Ohio, on January 13. Miss Zirkle had been dietitian at the Lima Memorial Hospital for the past 14 years and during her residence there she had made many friends.

Dallas Dietetic Association. The Texas Dietetic Association holds its annual meeting in Dallas March 29–30 at the Hotel Adolphus. One afternoon session will consist of a joint meeting with the Texas Restaurant Association. Rosa Spearman, supervisor, Dallas Public School Lunchrooms, Nell Morris, dietitian, Texas State College for Women, Grace Smith, lunchroom manager, Toledo, Ohio, and Mary Barber, president-elect, A. D. A., are among the speakers.

The Dallas Dietetic Association held the monthly dinner meeting at Hotel Stoneleigh, January 8. The program included two films, "Borden Fifty Years" and "How to Remember Names and Faces", presented by Mr. Raymond Duvall, Borden Company, Dallas.

Mrs. Frances Ross Lawler has announced the birth of a son, Michael Donavan, on December 23.

Four members appeared on radio programs recently. Doris Leggit and Orene McClellan, county demonstration agents, spoke over KRLQ January 6 on the "Business of Being a Rural Home Maker", as part of a program sponsored by the Dallas Business and Professional Women's Club. Rose Richter also appeared on a radio program sponsored by the club. Rosa Spearman was interviewed over Station KGKO during the Woman's Hour.

Jane Harper was married to Dr. John Wiggins, November 18, and now resides in Sanitorium, Texas.

Nell Morris spoke on "Equipment and Service" at the National School Cafeteria Association convention at Louisville, Kentucky, in November.

The dietitian interns at Parkland Hospital are spending one month each in the Dallas Public School Lunchrooms and with the public health agencies of Dallas.

Elizabeth Atkerson, chief dietitian, Parkland Hospital, recently completed a diet order and food specification that were adopted by the Dallas Department of Public Welfare for use in distributing food to those on relief in Dallas.

Illinois Dietetic Association. The annual meeting was held at the Drake Hotel, Chicago, February 9–10, with the following program:

Dr. Robert Wood Keaton, Department of Medicine, University of Illinois, The Hospital Dietitian's Opportunity.

Dr. Harold Lueth, associate in medicine, University of Illinois, The Management of Renal Disorders.

Dr. M. Herbert Barker, assistant professor of medicine, Northwestern University, The Rôle of Sulphur and Phosphorus in the Diet.

Dr. C. A. Elvehjem, professor of agricultural chemistry, University of Wisconsin, The Vitamin B Complex and Normal Nutrition.

Mrs. Victoria Van Cleve, Stevens Building Restaurant, Feeding the Public.

Millie E. Kalsem, chief executive dietitian, Cook County Hospital, Reorganization of the Dietary Department at Cook County Hospital.

Leo Lyons, commission of relief, City of Chicago, Meeting the Health Needs of Families on Relief.

Dr. Adelaide Spohn, Elizabeth McCormack Memorial Fund, Meeting the Food Needs of Families on Relief.

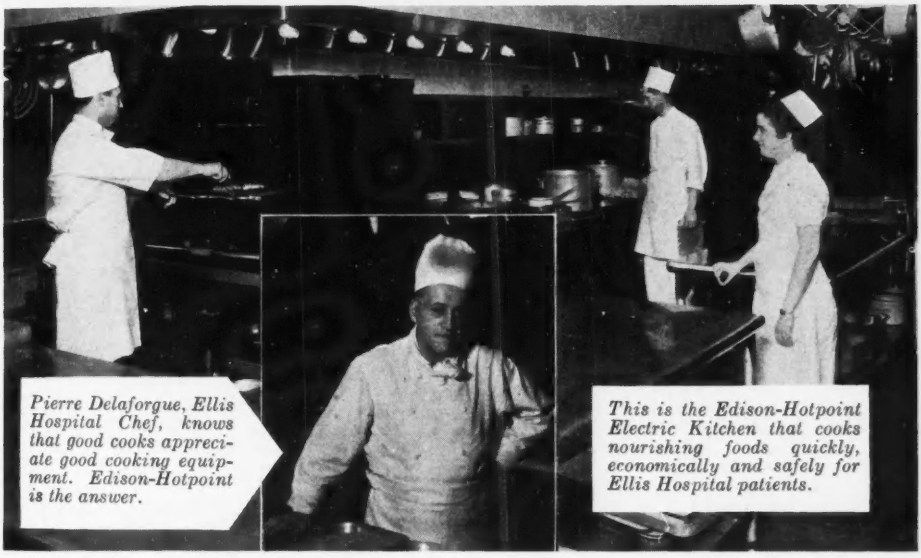
Mary I. Barber, president-elect, American Dietetic Association, subject to be announced.

Dorothy C. Thompson, home economics editor, Chicago *Herald American*, Opportunities for Home Economics Women in the Newspaper Field.

Katherine Mitchell, who served as dietitian in a hospital in Bombay, India, for a year and a half, returned to Chicago in December.

Evelyn Anderson, formerly of Passavant Hospital, recently returned from Australia where she was head dietitian at Newcastle Hospital.

Again Edison-Hotpoint Gets Hospital approval!



Pierre Delaforgue, Ellis Hospital Chef, knows that good cooks appreciate good cooking equipment. Edison-Hotpoint is the answer.

This is the Edison-Hotpoint Electric Kitchen that cooks nourishing foods quickly, economically and safely for Ellis Hospital patients.

Ellis Hospital of Schenectady, N. Y., Praises Edison-Hotpoint Electric Kitchens!

The Ellis Hospital, like so many other American institutions, selected Edison-Hotpoint Electric Cooking equipment because it is fast, clean, economical and dependable.

Fast—because Calrod, Hotpoint's patented heating element, cooks foods as fast as they will cook without stealing the life-giving minerals so necessary to patients.

Clean—because there is no combustion—no fire. No smoke. No fumes. No soot. No dirt.

Economical—because there is no waste heat—all the heat is used for cooking. With Edison-Hotpoint you cook the food—not the cook.

Dependable—because Edison-Hotpoint engineers, the finest in the industry, have made it dependable, and stake their reputation on it.

Progressive hospital authorities all over America are fast recognizing the tremendous advantage Edison-Hotpoint Commercial Electric Cooking Equipment offers.

Take a tip from successful hospital operators like those at the head of the Ellis Hospital in Schenectady, N. Y. Write today for complete information on Edison-Hotpoint Equipment.

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COMMERCIAL ELECTRIC EDISON Hotpoint COOKING EQUIPMENT

Dietitians who visit Chicago will be interested to know that Faith McAuley is now operating "Twin Chimneys", a new restaurant at 1825 West Monterey, Morgan Park, where she serves lunch and dinner, and the visitor is assured of excellent food.

Kansas City Dietetic Association elected the following officers for the year 1939-1940: president, Rachel Reed, Kansas City Dairy Council; vice-president, Mildred Young, Bethany Hospital, Kansas City; secretary, Mrs. Bernice Keime Shuler, 4809 Liberty; corresponding secretary, Wilhelmina Krumsich, Trinity Lutheran Hospital; treasurer, Pauline Kigereis, Children's Mercy Hospital.

Ruth Bailey, formerly of Menorah Hospital, is now at her home in Pittsburgh, Kansas. Mrs. Bess Woodrunn is now chief dietitian at Menorah.

Alene Faltesch is at St. Joseph Hospital and Marcella Carlton is at St. Mary's Hospital.

The November meeting was held at Bethany Hospital with Mildred Young as hostess. Mr. Harry S. Evans, for many years a Far East correspondent, gave a most interesting talk on the present conditions in China.

Massachusetts Dietetic Association. The January meeting was held at the Women's Educational and Industrial Union. Mr. Philip N. Clarke of the Westinghouse Company gave an illustrated talk on "sterilamps" and their application.

Grace Bixby, formerly nutritionist with the Massachusetts Department of Public Health, is now a full-time itinerant nutritionist in Norwood, Milton and Dedham. Sophie Gordon, of the same department, has been working on nutrition activities with a group of seventeen school teachers of the fifth, sixth and seventh grades in Barnstable. Dorothea Nicoll, also of the department, has been giving instruction in general nutrition and low cost nutrition during pregnancy to groups of hospital and public health nurses throughout the state.

Grace Thompson, a Beth Israel Hospital graduate, has the position of assistant dietitian at the Pottsville Hospital, Pottsville, Pennsylvania.

Helen McLean, formerly of the Worcester Memorial Hospital, has accepted a position at the Waterbury Hospital, Waterbury, Connecticut.

Margaret Berry, Phillips House dietitian at the Massachusetts General Hospital, has left to study at Teachers College, Columbia University, New York. Her place is being taken by Jane Clark Kerry who was formerly at the Morton Hospital, Taunton, Massachusetts.

Minnesota Dietetic Association. The first printed bulletin of the state association has just been received. The typographical arrangement and format are most pleasing, the cover carries the seal of the state association, and the leading article is a message from the president. Lorraine V. Frawley is editor and Angeline Mannick is assistant editor of this new publication. Considerable space is given to the program and other comment on the continuation course in dietetics at the University of Minnesota.

Continuation study courses, says Dr. William A. O'Brien of the Department of Postgraduate Medicine in the issue of the bulletin, are similar in some respects to those offered in institutes, short courses and symposia at conventions. There are certain individuals who apparently are able to keep abreast of new developments through reading. Most people, however, unless they come in contact with their fellow men at frequent intervals, have a tendency to go stale. Continuation courses are intended to provide these formal opportunities for those who intend to study together. These courses are successful if a group homogeneous in training and interests gathers for the purpose of studying a program which has been planned in advance by the members. A subject is suggested by individuals or an organized group and the main headings are classified as to their relative merit. In dietetics, administration, diet therapy, and fundamentals, including education, are about equally divided. The subjects are arranged first, then every effort is made to secure the proper person to answer the questions which have been raised. The study book is also an important feature of the course, eliminating the necessity for note-taking, and the material forming a basis for further study after the course is completed.

New Jersey Dietetic Association. A joint meeting of the outgoing and incoming Executive Committees was held January 3 at Morristown

PLAN FOR THE 1940 MEETING

HOTEL PENNSYLVANIA, NEW YORK CITY

October 20–24

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"This product is high in protein and in fat content and relatively low in total carbohydrates (starch, sugar and similar substances).

"The product is especially rich in iron. Its iron content equals that of liver, one of the best sources of iron. It is also high in calcium, containing twice as much of this element as an equal quantity of cow's milk. Furthermore, it is rich in phosphorous. Of the latter it contains about twice as much of calcium, which is an ideal ratio of these two important bone-building elements."

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Memorial Hospital with Sally Mooring and Elizabeth Rupert as hostesses. Plans were discussed for the coming year and a buffet supper was served.

A theatre party benefit was held in February and a social evening is planned for April 2 at the Women's Club, Morristown. The spring meeting is scheduled for April 25 at the Essex County Hospital, Cedar Grove. Officers for the year are: president, Elizabeth R. Rupert, Hackensack Hospital; vice-president, Katherine Booth, Cooper Hospital, Camden; secretary, Margaret McCoy, Extension Service, New Brunswick; treasurer, Annette Zelzer, Newark Beth Israel Hospital. Section chairmen are: Administration, Margaret Neubert, Trenton State Hospital; Professional Education, Jane Spinella, Morristown All Souls Hospital; Community Education, Alberta Dent, New Jersey College for Women; Diet Therapy, Winifred Cushing, Paterson General Hospital. Committee chairmen are: Finance, Sarah Campbell, Essex Mountain Sanatorium, Verona; Nominating, Lillian Park, Essex County Hospital; Revisions, Sophia Morris, Newark Beth Israel Hospital; Program, Sally Mooring, Morristown Memorial Hospital; and Publicity, Asta Low Packard, Somerville.

Mrs. Packard, former president of the New Jersey Dietetic Association, suffered a broken ankle in a recent automobile accident.

Mary Lynch, dietitian at Bayonne Hospital, is recovering from an illness at her home in Richmond Heights, Missouri. Miss Lynch expects to return to New Jersey in March.

Mrs. Baird Hammond (Lucille Zinn), with her husband and young son David, is now residing in Monroe, New York.

Virginia Frick, assistant dietitian at Hackensack Hospital, has announced her engagement to Mr. George Howkinson, a chemical engineer of Roselle, New Jersey. Miss Frick is a graduate of the New Jersey College for Women and Mr. Howkinson is a graduate of Purdue University. The wedding will be in June.

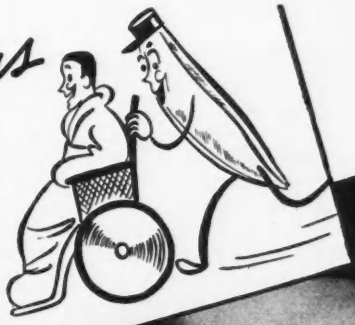
New York State Dietetic Association. The Buffalo Dietetic Association met in December at the Central Park Hospital. Miss Wynne of the Buffalo Public Library presented several brief reviews of popular books. One of the reports submitted during the business meeting was given by Margaret Fotheringham, delegate to the Inter-Club Council of Buffalo. The association has joined with thirteen other professional women's clubs, forming an inter-club council. Among these are the American Association of University Women, Buffalo Branch; the Business and Professional Women of Buffalo; Buffalo Branch of the National Women Lawyers' Association; Women Physicians' League; Zonta; Western New York Nurses' Association; the Association of Medical Record Librarians of Western New York; and other organizations. This council, which represents about 2500 business and professional women in Buffalo and Erie County, is making marked progress. The dietetic association is seeking to raise its own standards as well as those of other professional women and a stronger power and voice in civic affairs is foreseen for the women in Buffalo.

The Buffalo association has held joint meetings with the Buffalo Home Economics Association from time to time. The November meeting was held at the Iroquois Gas Company, with Mrs. Luella Fisher, home service director, as hostess, and Mary I. Barber of the Kellogg Company, Battle Creek, as guest speaker. Ina Lindman, home service director of the United Fruit Growers Association, spoke at the joint meeting on January 24. The regular monthly meeting was held at the Buffalo General Hospital on January 11 with Dr. Heyman Smolev discussing "History of Psychology."

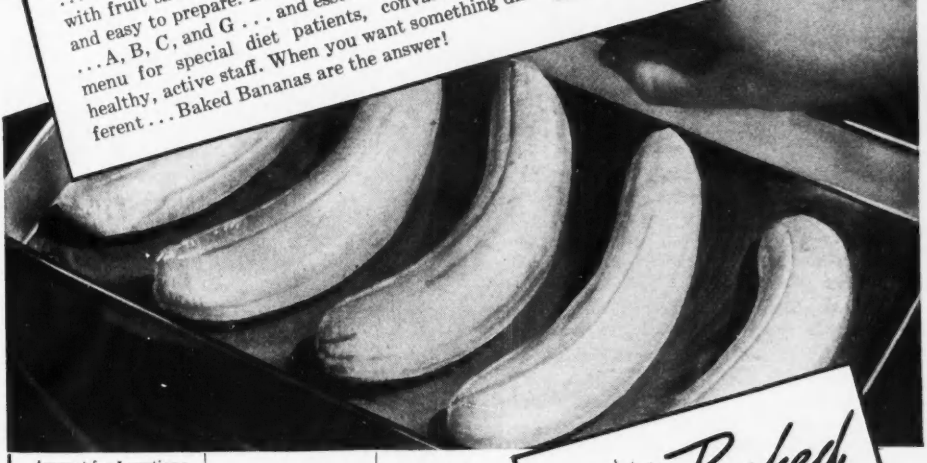
Central New York Dietetic Association felt especially fortunate in having the Institute of Nutrition and Diet held in Syracuse. This was sponsored by the Medical Society and the New York State Dietetic Association. Members of the latter were well represented at the sessions and a letter of appreciation and gratitude was sent to the chairman of the institute, Dr. Thomas P. Farmer, stating that the members would like to have the institute made an annual affair. The annual Christmas party was held at Percy Hughes School with Mrs. Helen Tooke Butler as hostess.

The Rochester Dietetic Association is again presenting a series of radio broadcasts, the first of which was given January 14. The speakers and topics are as follows: Mrs. Charles Fordyce, "The Housewife Goes to Market"; Laura Comstock and Margaret Bacon, "Food Values"; Etta Handy, "Nutrition Fads"; Esther Rhodes, "Weight Gain and Weight Reduction"; Dr. Estelle Hawley, "Vitamins"; and Blanche Bo-

SOMETHING DIFFERENT FOR *Hospital Menus*



HOT BAKED BANANAS . . . delicious, easily digestible and nutritious! Baked Bananas for breakfast . . . as a vegetable for luncheon . . . or as a hot dessert with fruit sauce for dinner . . . they're always quick and easy to prepare. Bananas add valuable vitamins . . . A, B, C, and G . . . and essential minerals to the menu for special diet patients, convalescents or healthy, active staff. When you want something different . . . Baked Bananas are the answer!



HOT *Baked Bananas*

Amount for 1 portion: 1 banana	12 portions	30 portions
INGREDIENTS	**AMOUNTS**	**AMOUNTS**
Bananas*, firm	12	30
Melted butter	¼ cup	¾ cup
Salt	as desired	as desired

**Use all-yellow or slightly green-tipped bananas*

Peel bananas. Place into well-buttered baking pans. Brush well with butter and sprinkle with salt. Bake in a moderate oven (375° F.) 15 to 18 minutes, or until bananas are tender . . . easily pierced with a fork. If desired, bake until almost done; then place under broiler heat until tender and browned. Serve hot as a vegetable, or as a dessert with a hot fruit sauce.

VARIATIONS

BAKED BANANAS WITH MOLASSES: Just before baking, brush bananas with lemon juice. Pour molasses over bananas, allowing ¾ to 1 cup molasses for every 6 bananas. Bake as above. Serve hot as a sweet entrée with beef or ham, or garnish with chopped toasted almonds and serve as a dessert. Maple syrup may be substituted for molasses.

BAKED BANANAS WITH BROWN SUGAR: Just before baking, sprinkle bananas lightly with brown sugar. Bake as above. Serve hot as a sweet entrée with beef, ham, lamb, chicken or turkey.

BAKED BANANAS WITH CRANBERRIES: Just before baking, pour hot cranberry sauce over bananas, allowing 1 cup sauce for every 6 bananas. Bake as above. Serve with beef, chicken or turkey.

BAKED BANANAS WITH ORANGE SAUCE: Just before baking, pour hot Orange Sauce over bananas, allowing 1 cup sauce for every 6 bananas. Bake as above. Serve hot as a sweet entrée or as a dessert.

Baked bananas are only one of the many new uses for bananas.

Free Quantity Recipes!

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Please send me, free, tested banana recipes, in quantity proportions, printed on handy 4 x 6 file cards.

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hach, "Cardiac Diet". Dr. J. R. Williams, chairman of the museum committee of the Rochester Academy of Medicine, has requested the association to place a permanent exhibit in the Academy of Medicine Building, and this is now being prepared. Rochester is looking forward to the meeting of the New York State Dietetic Association's annual convention, to be held at the Academy of Medicine, May 2–3. Grace Carden is general chairman, assisted by the following: Laura Comstock, Hospitality; Dorothy Neal, Tickets; Esther Rhodes, Registration; Mrs. Georgie Hoke, Ushers; Mrs. Edmund Marth, Luncheons; Dorothy Andrews, Banquet; Mrs. Donald Posson, Publicity; Blanche Bohach, Educational Exhibits; Etta Handy, Hobbies; and Dorothy Hass, Trips.

Utica Dietetic Association met in October at the Oneida County Hospital, Rome. Dr. Mahrer spoke on "America Through the Eyes of an Australian". A supper was served after a brief business meeting. In November the association met at Utica Memorial Hospital, with Mrs. Dolan and Miss Green as hostesses. A representative from the Petrolagar Laboratories spoke and showed moving pictures of experiments carried on in the laboratories. In December the annual Christmas party was held at the home of Miss Skiff, assisted by Mrs. Ruth Randall.

Hudson Valley Dietetic Association met in December at Ellis Hospital, Schenectady, as guests of Dorothy Dickinson and her staff. All were very much impressed with the new hospital and the well-equipped central service kitchen.

Virginia H. Ray was married to Mr. E. Richard Kelly on October 23, 1939, and is now making her home in Neuse, North Carolina. Mr. Kelly is a construction engineer, directing 11,000 men working on the Firestone development at Neuse. Genevieve Coon has taken her place as director of dietetics at Albany Hospital.

Cathryn Vermurlen has returned from Grand Haven, Michigan, after a leave of absence, to resume work at Albany Hospital.

Oklahoma Dietetic Association. Mrs. Freda S. Johnson, president, called a meeting of the Executive Committee on December 10 to complete arrangements for the state meeting to be held in Oklahoma City April 5–6. Members of this committee other than the elected officers, are: Mary Wilkinson, University Hospital; Esther Dinwiddie, W. P. A. School Lunch Project; Hazel Larick, Enid General Hospital; and Maxine Turner, nutritionist, State Health Department. Mary I. Barber, president-elect of the American Dietetic Association, will be the national representative at the state meeting. The chairmen in charge of the various sections for the program are: Diet Therapy, J. Marie Melgaard, chief dietitian, University Hospital; Administration, Dr. Daisy I. Purdy, head, Department of Household Science and Hotel Administration, Oklahoma A. & M. College; Dr. Helen Burton, director, School of Home Economics, University of Oklahoma. The local committee chairmen for the convention are: general chairman, Freda S. Johnson, University Hospital; Arrangements, Ann Hains, St. Anthony Hospital; Decorations, Veda Bailey, Wesley Hospital; Exhibits, Margaret Durrett, Oklahoma City General Hospital; Publicity, J. Marie Melgaard, University Hospital. Among the projects for the state meeting are plans to hold a Nutrition Forum for the public on Friday evening, April 5, at the City Auditorium. This will consist of 15-minute talks by several dietitians on various phases of nutrition, diet fads and fallacies, and exhibits of interest to the lay person.

The American Dietetic Association has approved the Administrative Course for Student Dietitians at the Oklahoma A. & M. College, making it the fifth college course on the approved list. Dr. Daisy I. Purdy heads the department, and student dietitians enrolled for the year are: Martha Peyton, Marguerite Whetsel, and Margaret Hall. There are three dormitories and dining halls at the college, all supervised by graduate dietitians.

The student dietetic course at the Oklahoma State University Hospital has been changed to admit students twice a year, in February and September. Students appointed for February 1 are: Katherine Hyde, University of Wisconsin; Mary K. Robb, University of Kansas; Martha Osborn, Oklahoma A. & M. College. A new affiliation for the University Hospital course is a month's commercial experience at the Y. W. C. A. Cafeteria in Oklahoma City. Mrs. Mercedes Gould is in charge of the institutional departments.

The state of Oklahoma has taken a step forward in the baffling problem of undernourished

How well utilized are the calcium and phosphorus in fortified cereals?

AN EXPERIMENT conducted by the College of Medicine of a state university sought to compare the utilization of calcium and phosphorus, when supplied chiefly in milk, with the utilization of the same minerals supplied by "New 5-Minute" Cream of Wheat.

Two groups of pre-school children, each consisting of two girls and three boys, served as subjects for six months.

It was discovered that the calcium and phosphorus of "New 5-Minute" Cream of Wheat were utilized as well, if not better, than when supplied by milk.*

Other experiments demonstrated that this new cereal cooks to full digestibility in 5 minutes of boiling—even for infants. Besides calcium and phosphorus, "New 5-Minute" Cream of Wheat has added iron and Vitamin B_1. It also has a somewhat richer flavor than "Regular" Cream of Wheat, recommended by many physicians for 45 years. Yet these advantages have been made without increasing the price. Both "New 5-Minute" and "Regular" Cream of Wheat are available at most food stores.

May we send you clinical samples of "New 5-Minute" Cream of Wheat? Write Dept. S3, Cream of Wheat Corporation, Minneapolis, Minnesota.

*Complete report soon to be published.

Mineral and Vitamin content of
"NEW 5-MINUTE" CREAM OF WHEAT
in average servings of 20 grams

PHOSPHORUS	118.0 milligrams
CALCIUM	101.0 milligrams
IRON	8.5 milligrams
VITAMIN B_1	11.0 Int'l Units

"Cream of Wheat" Reg. U. S. Pat. Off.

children by the inauguration of a vast feeding program under the auspices of the W. P. A. and an Advisory Board, consisting of representatives of the State Health Department, Welfare Board, Department of Education, and the Oklahoma A. & M. College. This project aims to feed thousands of needy school children. Muriel Tice Nelson, a recent graduate of the University Hospital Training Course, was named general superintendent of the School Lunch Program, with five assistant district supervisors as follows: Oklahoma City District, Pauline Naifeh, former dietitian at the Western Oklahoma Hospital; McAlster District, Esther Dinwiddie, former dietitian at the Valley View Hospital; Tulsa District, Helen Barber; Enid District, Velma Richardson; Hobart District, Flo Marie Hughes. The project involves an expenditure of nearly two million dollars, and it is estimated that free hot lunches will be given to one child in every six in Oklahoma; lunches will cost between four and six cents each. The schools must provide cafeterias with floors, screen windows and doors, and the necessary sanitary conditions.

The Oklahoma City Dietetic Association, with Mary Wilkinson, president, and twenty-nine members and guests were entertained at a Christmas party at the Y. W. C. A. on December 19. The January meeting was sponsored by the student dietitians at the University Hospital, with Dr. Lucile Spire Blachly as guest speaker. She told of the Nazi diet experiment she carried on with an average American family as "guinea-pigs" for one week in November 1939. While the Nazi diet is probably deficient in certain essential food requirements, notably fats and vitamin A, it is better balanced, within certain limitations, than the diet of the average American who is free to eat almost as he pleases; but if continued over long periods, the German wartime diet will weaken the civilian population and make it more susceptible to disease. Dr. Blachly claimed the experiment had a two-fold value. In addition to testing the physical and psychological effect of this diet on a typical American family, it indicated that if Americans, with their abundance, ate with intelligence and made use of the vast store of scientific diet information at their disposal, they could be the best nourished people on the earth, and would live longer and feel better every day of their lives.

Pennsylvania Dietetic Association. The first issue of the association's bulletin, with Lucille M. Refshauge as editor, and Elizabeth A. Foster, associate editor, has just been received, and is well filled with interesting news items and other articles, including "A Home Economist Visits Egypt" by Grace Nadig, director of Home Economics, Temple University, Philadelphia.

According to the bulletin, the dietitians of Central Pennsylvania have formed a group of State College Institution Administrators, made up of dietitians in charge of college dining halls and supervisors of dormitories.

Edna Bruno of Williamsport is now dietitian at the Carlisle Hospital, Carlisle. Miss Bruno, a graduate of Pennsylvania State College, completed her hospital dietetics course September 1 at the University of Michigan Hospital. Helen Boswell, formerly dietitian at Carlisle Hospital, is now in charge of the food service of the New James Wilson Hotel of Carlisle.

The Fifth Annual Post-Graduate Institute of the Philadelphia County Medical Society will be held April 15–19 at the Bellevue-Stratford Hotel, Philadelphia. A display of diets relating especially to cardiac, vascular and nephritic diseases, presented by the Philadelphia Dietetic Association, will be among the exhibits.

On December 18 Lucille M. Refshauge read a paper before the Hospital Pharmacy Association of Philadelphia on "Vitamins in the Hospital Dietary."

At the request of the Philadelphia Federation of Women's Clubs, an exhibit consisting of a bibliography of books and pamphlets on nutrition was prepared for the December meeting of the Federation, under the direction of Mrs. Anna dePlanter Bowes.

Irene Willson, chief dietitian, Shadyside Hospital, addressed the home economics students at Indiana State Teachers College on December 6 on the subject, "The Hospital Dietitian."

For the past three years the Home Economics Department at Temple University has been trying out a plan by which the students may gain experience in lunchroom management in a variety of situations. These include laboratory practice and experience in the Temple University dining room and cafeteria, serving rooms, kitchen and grill. In addition to this the students work in the school cafeterias and lunchrooms in the Philadelphia Public Schools. Here

More appetizing Breadstuffs

Modern bread, rolls and other baked goods are vastly superior to breadstuffs of the past. Non-fat milk solids in the formulas is largely responsible for this. Consumption is increased because of improved palatability, flavor, texture and general appearance. Nutritive value is improved because milk in bread adds valuable proteins, minerals, certain vitamins and lactose.

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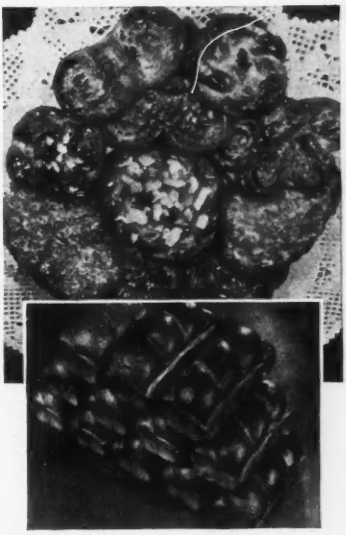

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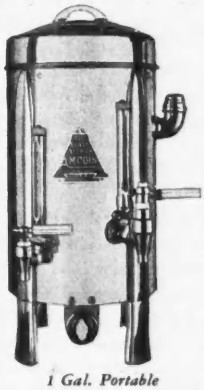

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they have an opportunity to observe the city system and to get an insight into the management of student groups during the busy periods at noon.

The state association with a membership of 360 has announced the annual state meeting for May 30–June 1 at Buck Hill Falls.

Philadelphia Dietetic Association. At the December meeting, Dr. Herbert T. Kelly of the University of Pennsylvania gave an illustrated lecture on the development of deficiency disease in the presence of a basic diet, his colored slides graphically showing the results particularly of vitamin B deficiency.

Adeline Wood was the speaker at the first meeting of the new year. Miss Wood discussed some of her experiences in the purchasing of food, stressing in particular the standards for purchases of eggs, canned fruit and vegetables, oranges and meats. Guides for purchasing, she said, depend upon the clientele served, their culture, race and tastes, as well as the quality and net yield of products purchased.

On January 23, the midyear party to raise welfare funds was held at the Institute of the Pennsylvania Hospital. The Hospitality Committee under the direction of Betty Brewer made the evening a pleasant one, the association clearing about $75.00 toward a welfare fund which is donated to various social and relief agencies. The association also paid for a Christmas basket, sent out in cooperation with a local agency.

Pittsburgh Dietetic Association. Jeannette Morris, for four years with the Elizabeth Steel Magee Hospital, is resigning to take charge of the Jackstown Hotel dining rooms, kitchen and entire food service. The hotel is located between Pittsburgh and Greensburg, near Irwin, Pennsylvania. Miss Morris is a graduate of Marshall College, West Virginia, and of the student dietetic training course, West Penn Hospital.

Catherine Jane Fry, for the last five and one-half years assistant dietitian, Allegheny General Hospital, has resigned to become chief dietitian at the State Hospital for Crippled Children, Elizabethtown, Pennsylvania. Miss Fry has therefore resigned her office as president of the association and for the remainder of the year her responsibilities will be assumed by the vice-president, Jennie Marton, chief dietitian, Presbyterian Hospital.

Charlotte Addison, chief dietitian at the West Penn Hospital, has recovered from a recent illness.

Mary Sue Lear, student dietitian, is now assisting with the research of Dr. James A. Stranger and Dr. Hagan of the West Penn staff. Ann Swartz, graduate of Drexel College and Hahnemann Hospital Student Course, is assistant dietitian in charge of pavilions at West Penn.

Angela Helfrich of Cincinnati is now assistant dietitian at the St. Francis Hospital. Another of the assistants is Kay Petroski, formerly assistant dietitian at the Elizabeth Steel Magee Hospital.

Formerly chief dietitian at the Passavant Hospital, Sarah Keele is now assisting Jeannette Morris, chief dietitian at the Magee Hospital.

Ruth Kennedy, at one time dietitian at the Joseph Horne Company Tea Room, is now field worker with the Pittsburgh Dairy Council. Her previous responsibilities have been assumed by Mary O'Donnell, formerly assistant dietitian, Presbyterian Hospital.

On January 4, Audrey Oakley of the Pittsburgh District Dairy Council, was guest speaker on the Health Education radio hour. Her topic was "Dairy Council Activities."

Saint Louis Dietetic Association. The December meeting, arranged by the Administrative Section, was held at the Jewish Hospital Nurses' Home. Regina Gottlieb, chairman of the section, presented Mr. Walter J. Grolton, superintendent of the Saint Louis City Hospital, who gave an interesting talk on the dietary department and what is expected of the dietitian from the administrator's point of view.

Mrs. Isabelle McMenamy Cheek, dietitian at the Saint Louis City Sanatorium, spoke on administrative problems of the dietitian in a large mental institution. A business meeting followed.

The guest speaker at the January meeting, Dr. John C. Whitehorn, professor of psychiatry, Washington University Medical School, discussed "Emotion and Diet."

In February, Dr. George R. Cowgill spoke in Saint Louis under the auspices of the Dairy Council on "Nutrition and Human Welfare." Through the Community Education Section and its chairman, Marie Harrington, the members

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of the association were invited guests at this meeting.

Announcements have been received of the birth of a daughter, Jennifer Ruth Aitken, to Lieutenant Commander and Mrs. David Dundas Aitken at Sydney, Australia, on November 4. Mrs. Aitken was formerly Edith Tilton, chief dietitian at Barnes Hospital.

On November 6 members of the association were guests at a meeting sponsored by the Dairy Council to hear Dr. James S. McLester who spoke on "Recent Trends in Nutrition."

Mary Hughes, graduate of Saint Louis University course for student dietitians, was married recently to Dr. S. H. Bergman of Saint Louis.

Announcement has been made of the marriage of Marjorie Roth, also of the Saint Louis University course, to Mr. Russell Anton.

Marjorie Jorgensen, graduate of the Seattle Cooperative Course for student dietitians, is now a member of the Barnes Hospital staff.

Wisconsin Dietetic Association. Milwaukee County has had an advisory Nutrition Committee about nine years. It is known as the Sub-Committee of Dietitians of the Central Council Committee on Relief Giving Agencies. The personnel consists of nutrition workers connected with Milwaukee County Department of Public Assistance and other social service agencies having nutritionists on their staffs. City and vocational schools, also a college, are represented.

The opportunities that have been presented to this committee have been interesting and challenging, and have included participation in the revision of the Budget Book which is recognized as a basis for budget work in this area.

Doris Johnson, State San, Ethel Keating and Dorothy Belknap, Milwaukee County Institutions, attended the continuation study course for dietitians sponsored by the University of Minnesota, January 29–31.

Lillian Fried, Ann Emery Hall, Madison, presided at the Wisconsin Dietetic Association meeting at the Loraine Hotel, Madison. Reports on the plans for the annual meeting, March 29–30, were given by the following: Program, Dr. Helen Parsons; Educational Exhibits, Mae Reynolds; Commercial, Isla Jepson; Hospitality, Isabel Palm; Publicity, Eleanor Nesvig.

Dorothy Georg is a new member of the dietary staff at Milwaukee County Hospital.

The Milwaukee Dietetic Association's December meeting was a Christmas party at Dorothy Hathaway's home. Elinor Ellison, Agnes Walish, Marie Ryan, Grace Clark Ullmann and Dorothy Belknap were members who assisted in making arrangements. This is the one social meeting for the year, and the good attendance was indicative of the interest.

The January meeting was held at Drexel Lodge, Marquette University. The subject, "Psychology of Feeding Nursery School Children," was presented by Helen R. Kreielsheimer. She included behavior problems that had presented themselves in connection with her subject.

Sue Sadow, home economist, New York City Department of Public Welfare, recently conferred with nutritionists on the staff of Milwaukee County's Department of Public Assistance.

The Program Committee of Dietitians for the Tri-State Hospital Assembly met at Wrigley's Restaurant for final discussion of the program for May 1–3. Ethel Keating, president of the Wisconsin Dietetic Association, is program chairman and the Illinois and Indiana Dietetic Associations are cooperating organizations.

Hedwig Poehler, Milwaukee City Health Department nutritionist, gave a series of health lectures at the Milwaukee Urban League sponsored by the Wisconsin Anti-Tuberculosis Association. She also spoke before the Mothers' Club at the Salvation Army headquarters. Nutrition was again her subject when she participated in the Parents' Forum at the Auer Avenue Social Center.

The Milwaukee Home Economics Club is sponsoring a Consumers' Day at the Schroeder Hotel on March 5, assisted by a number of other women's organizations. The program, with outstanding speakers, a forum and exhibits, offers a well-rounded presentation of consumers' problems. Breta Griem, Ella Liner Lambert, Elizabeth Tonigan and Ada B. Lothe, are some of the A. D. A. members participating.

News from our Advertisers and Exhibitors. Among the excellent recipe services available to dietitians is that distributed by the *National Biscuit Company*, 449 West 14th St., New York,

The General Foods man who calls on you is trained to be helpful on food problems. He is at your service.

NOW—YOU CAN PLAN TO SERVE HOME-TYPE CAKES MORE OFTEN!

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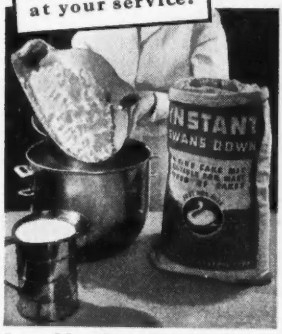

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In less than half an hour you have these delicious home-type cakes ready to serve.

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The most important ingredient is the famous Swans Down Cake Flour. Blended with this popular high-quality product, in just the right proportions, are: shortening, egg whites, sugar, baking powder and flavoring. All you add is milk.

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under the editorship of Helen S. Kintzing. N.B.C. "Cracker-Chatter" includes family size recipes but Miss Kintzing's tested quantity recipes are available upon request addressed to the National Biscuit Company.

Another recipe service is offered by the "*Junket Folks*", Little Falls, New York, who at present are featuring their new "Danish Dessert".

Chelsea Products, makers of "Cafatrays", emphasize the value of these trays in curbing the element of noise in institutions. Their lightness, inexpensiveness and ease of cleaning, are added features of interest to the dietitian.

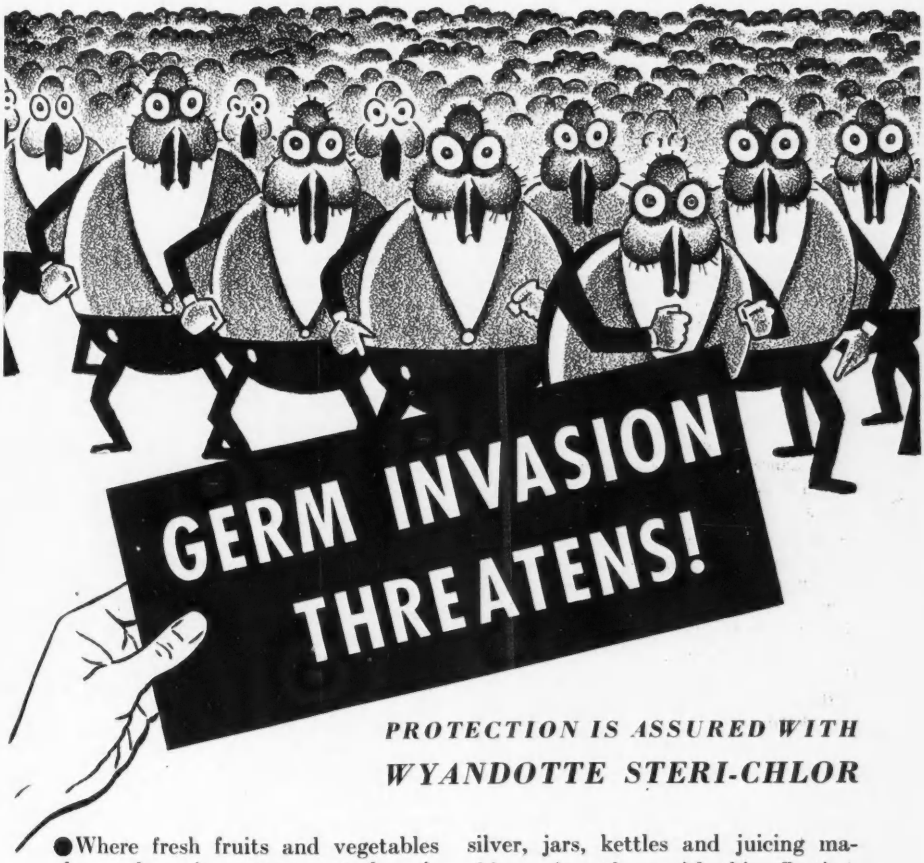
The *Wander Company*, makers of "Ovaltine", offer professional samples of their new improved product to readers of this JOURNAL. This product now presents many practical advantages as a supplement to the diet of the convalescent, during lactation, and for underweight children, elderly people and others with impaired digestion. Three servings daily—made with milk as directed—supply 2625 units of vitamin A, 297 units of B_1, 316 of D, 488 of G, 1 gram of calcium, 881 milligrams of phosphorus, 8.7 milligrams of iron. Thus three daily servings supply virtually the entire estimated daily requirements of vitamin B_1, calcium and phosphorus, and from one-half to three-quarters of the daily needs for vitamins A, D and G and iron, in addition to highly assimilable carbohydrates, emulsified fats and high quality proteins and other important food properties.

The *Florida Citrus Commission*, through Mr. L. W. Marvin, chairman of the Scientific Advisory Committee, are now distributing a handy and useful little booklet entitled "Citrus Fruits and Health". The contents cover the public health aspects of the use of citrus fruits, their use in special diets, infancy and growth, pregnancy and lactation, and in many other conditions and diseases. The text was prepared by a well known practicing physician and a former teacher of physiology, with the cooperation of leading nutritionists, biochemists, dentists and physicians. The contents of the book are well documented by an excellent and extensive bibliography covering much of the recent work in connection with the place of the vitamins, especially vitamin C, in nutrition and diet therapy. It is to be noted, too, that the advertising copy for the Florida Citrus Commission is based almost exclusively on the authoritative information contained in this book. The commission is also distributing reprints which report investigations on the dietary value of orange juice.

The *Irradiated Evaporated Milk Institute*, Chicago, in addition to quantity recipe cards and low cost recipes for quantity food preparation, have available a number of booklets and other publications useful for teaching purposes, and are distributing a recent reprint of Souders, Hunscher, Hummel and Macy, "Influence of Fluid and of Evaporated Milk on Mineral and Nitrogen Metabolism of Growing Children".

The Selective Menu

THIS PRACTICE, but under another name, has been known to the well trained cuisinier for a hundred years and in special cases, long before that. From Careme, I learn that the "Menu aux Choix" was given for all visitors in the town of Aix and decreed by the Burgomeister, Armand Ragusse, who for the conveniences of travellers in 1660 at the visit of Louis the XIV could choose the menu according to the pocket book. In 1860, in the Hotel Mule-Noire, owned by a former chef named Sylvester Marquet, the first printed menus with the title of "Menu aux prix des Choix" were used. The soup and the dessert and the different wines according to the entree played the greatest attraction adding to the advertisement "Un repas pour toutes les poches."—*Rene Black in the Hotel Monthly, January 1940.*



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WHO'S WHO IN THIS ISSUE

Albert H. Rowe, M.D., F.A.C.P., noted authority on allergy, is lecturer in medicine at the University of California Medical School, consultant in allergic and metabolic diseases, Alameda County Hospital, Oakland, and author of *Clinical Allergy* (1937), *Food Allergy* (1932), and *A Handbook for the Diabetic* (1928).

Frances Cope Hummel, M.S., and **Marion L. Shepherd,** A.B., are associated with the Research Laboratory of the Children's Fund of Michigan as chemists. For several years they have participated in studies of infant growth and metabolic investigations of normal children and women. Primarily, the metabolic studies have centered around continuous and repeated metabolic balances of nitrogen and the seven mineral elements which are present in the body in the largest amounts. These young investigators have been co-authors of a number of papers which have been published on human growth and nutrition. **Icie Macy-Hoobler,** Ph.D., is director of the Research Laboratory of the Children's Fund of Michigan. A student under the late Professor Lafayette B. Mendel of Yale University, Dr. Macy-Hoobler became director of the Nutrition Research Laboratories of the Merrill Palmer School and Children's Hospital of Michigan in 1923. The next eight years were occupied with investigations upon the metabolism of women during the reproductive cycle and the composition of human milk. When the Children's Fund of Michigan obtained the laboratory in 1931, intensive chemical studies of normal children were started and have been increasingly productive since that time. In 1938 Dr. Macy-Hoobler was given the Norlin medal by the Alumni Association of the University of Colorado for outstanding achievement, and in 1939 received from the American Home Economics Association the Borden Award for research in applied nutrition. She is a member of numerous scientific societies.

Dr. Mary S. Rose, a frequent contributor to this JOURNAL, was noted in this JOURNAL for February 1939. **Emma W. Gardner,** B.S., New Jersey College for Women, M.A., Columbia University, taught home economics in the public schools of Orange, New Jersey, 1931–1936. Later she was a student dietitian at the Mountainside Hospital, Montclair, N. J. Since 1937 she has been a part-time assistant in nutrition research, and at present assists Dr. Rose at the Speyer School, New York, in teaching nutrition to boys and girls.

Jet C. Winters, B.A., University of Texas, M.A., Teachers College, Columbia University, and Ph.D., Yale University, was formerly a teacher at Texas State College for Women, Denton, and at present is professor of home economics, teaching nutrition in the Department of Home Economics, The University of Texas, Denton.

Ruth Foote, M.A., Texas State College for Women, Denton, was formerly dietitian and instructor in foods at Southwestern Junior College, Keene, Texas. She is now teaching in a Seventh-day Adventist Mission at Malamulo, Nyasaland, British South Africa. **Ercel S. Eppright,** Ph.D., Yale University, is director of home economics at Texas State College for Women. She is a member of the Texas Dietetic and the American Dietetic Associations.

Mary Louise Bone, B.S., was noted in the September 1934 JOURNAL. She was director of the Dietary Department, Ohio State University Hospital, from 1930–1937. Since 1937 she has been graduate assistant in the Foods and Nutrition Department, Purdue University. Miss Bone has been active in the American Dietetic Association as program chairman in 1935, member of the Investigation Board, 1936–1938, and Nominating Committee, 1938. **Gertrude Sunderlin,** Ph.D., Iowa State College, 1928, is assistant professor, Foods and Nutrition Department, Purdue University. She formerly taught at South Dakota State College and did research at the Experiment Station, Louisiana State University. Miss Sunderlin has been teaching in experimental foods for the past eight years at Purdue.

W. P. Morrill, M.D., is editor of the Hospital Abstract Service and in charge of the Technical Advisory Service of the American Hospital Association. He is a graduate of the University

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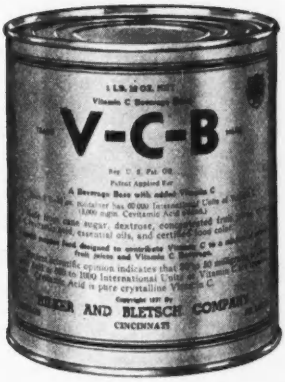

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of Michigan and Johns Hopkins Medical School and has been active in hospital administration in various parts of the country since 1908. Dr. Morrill has done hospital consulting work with Dr. William W. Walsh. He is the author of *Hospital Manual of Operation*. During the World War, Dr. Morrill was commanding officer of Base Hospitals 90 and 91 and Camp Hospital 20.

Myer Glickstein is Alvord Fellow in Dairy Industry at Massachusetts State College, from which he received the B.S. and M.S. degrees.

T. Edweena McCaffary, who is with the Tuberculosis Division of the Department of Public Health, Government of the Province of Alberta, stationed at the Central Alberta Sanatorium, Calgary, writes that her students feel that two weeks of practical experience in an institution is too short a period and have asked their commanding officers to give them at least a month. Miss McCaffary intimates that arrangements will probably be made to extend this period and to continue with other courses.

➤➤◁◁

Nutrition in New Zealand

SUMMING UP the nutritional problems of New Zealand, it is suggested that (1) calories are adequate, (2) first class protein is adequate but ill chosen, and (3) vitamins B_1 and D are suboptimal, as are iron, calcium and iodine. This situation is brought about by a combination of poor knowledge of nutritional science and the relatively high price of many of the protective foodstuffs. Home science has always been a feature of the University of Otago, and extension activities are in operation. Nutrition education has been furthered by the Women's Food Value League, on the executive committee of which are British Medical Association members. There are scattered foci of reform such as the Auckland Boy's Grammar School, the results of which have been stimulating.—*Foreign Letters, J. A. M. A., Vol. 113: 2074, 1939.*

The Food History

AS EARLY as possible the dietitian takes the patient's "food history" This notes in an easily referred to form the patient's reaction to the foods most commonly served. The dietitian then checks each menu for each patient *from the food history* and gets his choices straight without boring him with ever repeated details of "do you want shrimp or crab cake tomorrow, Mr. Brown?" And the element of surprise is there. The patient has not the vaguest idea as to what he is to have for dinner. The menus are well balanced and great variety is achieved because we can work in many items which the patient might not pick for himself. The person serving the tray should visit each patient after dinner and supper every day and find out if there is any item for which he has an especial desire. This method of administration takes care of every objection to the selective menu.—*Geraghty, E. M.: Organization and Management of the Hospital Food Service—Part I, Hospitals, December, 1939.*

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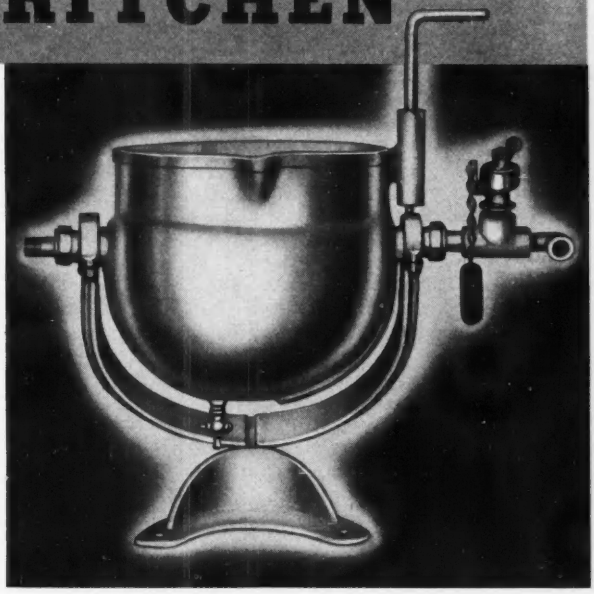

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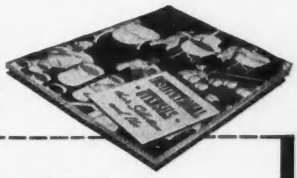

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